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THE
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NEW SERIES. NEW HAVEN, CONN., MAY, 1872. VOL. II.—NO. 5.

TEACHING BY ROTE.

BY WM. WORTHINGTON FOWLER, DURHAM, CT.

Given,—an average school boy or girl possessing his or her five senses, *i. e.* (to use the language of the metaphysician), sense-perception or a capacity for receiving impressions of different objects in the outer world, and of distinguishing between them, possessing also the power of representation, so-called, including in that term what are usually styled memory or the capacity of retaining impressions, and imagination, or the capacity of reproducing images,—the ultimate problem laid before the teacher is, *How shall I teach this boy or girl to think?*

This is the true aim of the higher education.

But to think is that mental process which compares, distinguishes and combines *different knowledges*, and judges or draws conclusions from them. Thought presupposes knowledge. Other things being equal, he thinks most logically who is most thoroughly well possessed of the antecedent facts; and though it is a melancholy truth that the large majority of men do not think correctly on general subjects, even when conversant with the facts, yet it is equally true that in the vocation wherein they are specially trained and fully possessed of the requisite knowledge, and wherein the mind is acted on with great force by the necessity of earning a livelihood or by the love of gain, power or other stimuli, they are generally quick and accurate reasoners. The hunter tracks the game to its covert, the mechanic works the machine, the farmer manages the farm upon the basis of an accurate special knowledge previously acquired, notwithstanding they may be unable to calculate an eclipse, write a newspaper leader, or even argue intelligently from the political situation.

The acquisition of a body of knowledge as the materials for thought to exercise itself upon, is the first step in that long, varied, searching educational process, which commences as soon as the eye of infancy opens upon this world, and ends only with the extinction of the senses in death.

The school is the organized mental gymnasium which seeks to enlist more directly the will of the scholar in the task of learning, while the teacher stands as the interpreter between the scholar's mind and the outer world through the medium of books.

This brings us to the methods of communicating knowledge, and more especially to that method called teaching by rote.

This phrase taken in its ordinary acceptation is defined as "a round of words; frequent repetition of words or sounds without attending to the signification or to principles or to rules, a practice that impresses words in the memory without an effort of the understanding and without the aid of rules."

To what extent this method of imparting knowledge ought to prevail is one question; to what extent it actually does prevail is another. No one can upon reflection deny that nearly the whole body of our first impressions is obtained in this way.

The appearance, nature and qualities of matter, the relations of one kind of matter to another, and the myriad facts which are cognizable by the senses are originally learned by rote.

The child learns its letters, and to read and talk, by rote. The boy learns to sing and play on musical instruments by rote. The scholar learns to spell and to write by rote. The arithmetical tables, a considerable portion of geography, grammar, of the classics and modern languages are acquired first of all by rote. Indeed of all those branches taught in our primary schools, not to speak of our academies and higher institutions of learning, it would be difficult to name one in which the rote method is not applied more or less, in at least the first stages of the educational process. The writer has known collegians who were able to recite glibly in the more metaphysical portions of classical syntax, the subjunctive mood for instance, but were almost wholly unable to apply the rules in their readings of classical authors. A scholar possessing a retentive memory, will sometimes be able to recite Euclid from cover to cover, but breaks down when he is put at the solution of an Original Point.

While the extent to which the rote method prevails and must prevail is apparent, it occurs to us to ask, how far it may be employed by teachers.

As to the comparative brightness of scholars, it

is of little moment to know what Bacon, or Milton, or Newton may have done in their wondrous boyhood. Our teacher has to deal with common clay and must mould it as he best can, recollecting that his task must too frequently be the hard and thankless one of throwing the light of his intelligence upon a surface that rarely receives or reflects a ray. If we adhere strictly to our definition, it may be said in general that every fact considered as disjoined from any signification or from any classification, may be acquired by rote.

The letters of the alphabet, the spelling of at least the monosyllabic words, as bag, fag, rag, the musical notes, Do, Re, Mi, &c., and the formation of letters and words from a copy book, are instances in point. Viewed in this way, the field is narrowed. We must remember, however, that the process of learning is mixed of light and darkness, of blind groping and intelligent progress, the true sense and signification of things being alternately displayed upon or withdrawn from the sight and sound of things.

Still the ground must be gone over, even though some of it be gone over unintelligently.

To illustrate this by a metaphor: suppose a traveler, preceded by a guide familiar with the way, to come out from utter darkness and enter an avenue lit by lamps only at long intervals; in the dark intervals he hearkens to the voice of his guide, and his feet are lifted and thrown forward automatically; he scarcely knows that he makes progress towards the next area of light. But he makes progress. There is a glimmer now, then a broad twilight, and at last a full effulgence as bright as noonday.

Applying this metaphor to the case of the scholar, he follows *his* guide the teacher through dark spaces where he parrots phrases without understanding their meaning, *i. e.*, learns by rote (if the word "learn" can be properly used in this sense), and advancing thus, emerges at last into the full light of the understanding.

It would appear that the teacher in a vast majority of cases has only the choice of either teaching not at all, or of teaching by rote portions of what is to be taught in the ordinary school studies.

It is in the teaching of language that this method may be most largely applied, and with least prejudice. Commencing with the first lispings of the child, the rudiments of his native tongue may, nay, must be, taught by rote.

The next stage in the process is classification, *i. e.*, grammar. Here certain rules are presented to the scholar, some of which he may, and some of which he may not, understand. How far mere blind memory, unassisted by thorough understanding, should be charged with these rules depends of course somewhat upon the teacher and somewhat upon the scholar. It were perhaps better that the rules be memorized without understanding them than that they be passed over.

As to the acquisition of foreign languages, we cannot do better than to call to mind what Locke, that great lawgiver in matters concerning education, remarks, viz.: "Languages are only to be learned by rote, and a man who does not speak English or Latin perfectly by rote, so that having thought of the thing he would speak of, his tongue of course without thought of rules of grammar falls into the proper expression and idiom of that language, does not speak it well, nor is he master of it."

The sense in which Locke uses the word rote is obviously the learning of a language without the assistance of grammar, by associating with those who speak it well. This is precisely the oral method of teaching language by which the pupil learns the pronunciation, accent and collocation of words by being impressed by a constant repetition of phrases from the mouth of the teacher, sense or meaning and sound being gradually associated in the process.

We learn foreign languages by this method precisely as we acquire our own in infancy. The separate steps being first words, then phrases, then connected conversation, then reading and writing the language sought to be acquired, then the classification, structure of the language, etc., *i. e.*, grammar.

This would seem the natural and logical course in all primal mental training: The objective being preliminary to the subjective, sense to understanding, things to thought. The tongue of the pupil is the interpreter between the eye or ear and the brain. The fact that the brain appears to perform its work upon language automatically is only proof of the thoroughness of the training by which it is enabled to perform that work. We will note in some future number how, as it seems to the writer, a language may be best acquired by rote.

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The following method has been used for some years in the primary rooms of a large graded school in this state, and has been successful not only in providing for the children employment which interests them, but as a preparation for the work of writing in the intermediate rooms. It differs from

other modes of teaching printing in the manner of ruling the slates and in the use of the italic letter.

Three narrow spaces each three-sixteenths of an inch wide, constitute what is called "the line of printing," short letters like *a* and *o* occupying the middle space, such as *b* and *d* the upper and middle spaces, and *g*, *y* and like letters the middle and lower spaces, *f* requiring the three spaces. The wide space separating one line of printing from another is made twice the width of the narrow ones that it may be divided when the slate is needed for writing, these two with the first three making the five spaces required. There is no confusion in the change, as loop letters are not used in printing and it is only for these that the increase in the number of spaces is made.

Care is needed in ruling, to cut deep, fine lines. This may be done with a tool made for the purpose, or with a slender awl or the thin worn blade of a knife. The divisions are readily marked from an ordinary drawing rule.

The objection that the use of a style of letter differing from that in books might be a hindrance to beginners in reading, does not prove a serious one, as there are only two letters, *a* and *g*, which need especial care. The advantages in adopting the italic letter are that it is easily formed, and that it is much more useful as a step towards writing than the Roman letter.

Good models for it may be found in Payson, Dunton and Scribner's book of alphabets, on pages 18 and 19, or the alphabet of italic letters given in most spelling books may be taken as a guide, except for *x* and *z*, which should be made of straight lines.

Too much pains cannot be taken to give a correct copy of each lesson on the blackboard, making the narrow spaces at least two inches wide, that the letters may be plainly seen from all parts of the room. This copy should be made when the children are present to watch the formation of each letter. A reading and spelling lesson may then be given in connection with the printing. The class being ready with slates and pencils, the teacher gives the signal for attention and places the copy on the board. "Read." The children pronounce the word. "Spell." They name the letters. "Print." "Show slates." The work is criticised and corrected and the directions are repeated for each succeeding word.

If there is a blackboard that can be spared for the purpose, it is a good plan to keep for reference a copy of all the letters arranged in alphabetical order, in their proper spaces. This furnishes ready work for the children, such as selecting and printing the letters that occupy the middle space, or those of the upper and middle spaces, or for a longer lesson, let them copy all, arranging in groups according to the space used. An occasional lesson may be given from the book with the instruction to look at this reference board when there is doubt concerning the spaces required.

The order in teaching is, first, small letters and words containing small letters; then capitals and words containing capitals; afterward, sentences.

There is danger that when the pupils are advanced so as to compose sentences for printing, that the execution of the letters will be neglected. This may be prevented by daily exercises of five minutes upon single letters. The time is sufficient for the children to copy the letter once, for the teacher to examine the slates, to show faults from the board and for the children to erase and repeat, correcting the mistakes made.

The direction to touch the ruled lines without crossing them needs to be often given to secure evenness in height.

A good position of the body, arm and hand is the most difficult point of all, but it is possible to gain it even with very small children.

To keep the body erect, to sit with the right side to the desk, not touching the desk, to rest the arm on the rolling muscle in front of the elbow, rather than at the wrist, and to hold the hand so that the knuckles will point to the ceiling, sliding it on the nails of the third and fourth fingers, are lessons as easily learned at the age of five as at ten years. The other points that need attention, evenness in slope, spacing, and the correct form of the letters, may be well taught afterward—position, never so well as in the child's first term at school. Much time usually spent in the higher rooms in breaking up bad habits formed in the lower rooms might be saved by thorough drill in the earliest lessons.

THEORIES IN TEACHING.

BY HARRIETTE O. NELSON, HAVERHILL, MASS.

There is perhaps no moment in the career of a teacher when he feels such high hopes and strong self-confidence, as its very beginning. Fresh from the discipline and love of the schools, well-read in educational works, and so well-informed of the failures of others, as to feel assured of profiting thereby, he generally enters upon his new calling

with a theory of teaching so matured and perfect as to seem in itself a pledge of success.

But in teaching, as indeed in so many other callings, experience is a touchstone, whose test reveals the worthlessness of many cherished notions. Every community, every school, every pupil, has peculiarities that must influence a teacher's practice, and these it often requires time and skill to discover. And it is equally difficult and equally necessary for a teacher to understand his own idiosyncrasies (for it is to be hoped that he possesses them), to observe the influence of these upon his pupils and find out where his power and his danger lie.

"*Non omnes omnia possumus*;" let us not arrogate perfection to ourselves at any stage of our experience, or charge upon our stars or our pupils the fault that lies in ourselves. Yet there are days when the fault really seems to be in the stars or the atmosphere, or some other cause equally out of reach—days which quite set at nought all ordinary principles of action. You observe a general and unaccountable restlessness of bodies and dullness of minds. The air is full of a tendency to whispering and giggling—or possibly, weeping—while no unlucky individual can be found to be made an example of. The teacher is astonished at unheard-of blunders in recitations. One of his class in the *Georgics* will translate, "*Cæsariem effusa nitidam per candida colla*," on this wise, "Pouring forth tears from her white collar;" while some pretty damsel whose studies in Virgil and English literature have gone on simultaneously, will name Laocoon and Portia as the leading characters of the "Merchant of Venice," and gravely inform you that Laocoon married Portia.

You doubt for a time whether this be you and your school, or some one else with a far inferior school. If there is any theory that will carry one successfully through such days, it is that of the holding fast of that patience, which, as Coleridge suggests, has sometimes to supply the place of all the other magisterial virtues.

While therefore a young teacher is prone to insist upon certain fixed methods as applicable to all possible circumstances, those more experienced are well aware that a chief requisite of success is that tact and versatility which can adapt theories to special cases, and even sometimes throw them aside altogether, and act from the inspiration or impulse of the occasion.

Some never learn to do this, but on the other hand fossilize into a hopeless hardness and rigidity with the lapse of years. The pet notions of their earlier experience become embodied in habits, while changes of time and place, and the endless varieties in the characters of their pupils are matters to which they pay slight heed. Here is a teacher, naturally strong, thorough and stern, who believes that a school should present the regularity and precision of a military company. An absolute and unquestioning conformity to rules, perfect quiet, evenness of movement, and unfailing readiness in recitation are his ideal—an ideal that cannot be fully attained without sacrifices in some other direction. Have you not known schools in which all freshness and originality of development in character were sacrificed on the altar of routine, where the pupils were regarded as made for the system, instead of the system for the pupils, and the fact of "good order" was considered an offset for a lack in almost every other respect? Under such a discipline, scholars become repressed in spirits, given to petty trickeries and evasions, while the teacher is fretted by the most trivial deviations from rules, is over-severe and easily discouraged, well enough aware that things are wrong, but not wise and humble enough to discover the mistake in himself.

Then there is the other extreme, a teacher—let us for the sake of variety use here the feminine pronouns—is convinced that since "love rules the court, the camp, the grove," it may well rule the school room also. This theory seems so beautiful that it surely ought to meet all emergencies. But a day comes like those of which we have spoken. Patrick is rude and insolent; Sarah is sulky and will not study; the rest catch the infection. These days multiply and chaos reigns supreme. The law of love does not work, and woe to her who has no resort beside.

You find in the field of education, again, teachers good, really noble but morbidly conscientious, who give themselves to their work with an entireness of devotion that might produce large results, could human nature long stand the strain. But a reaction of languor and depression is too likely to succeed. In order to be a good teacher, one must be more than a mere teacher, must have a healthy, well-balanced, large nature, which is not to be cultivated by the complete sacrifice of time, energies and interests to school-room work. There are none who need more than teachers, the exhilarating influences of varied reading, cultivated society, and an extensive acquaintance with the world of men and nature. Teachers who continually think,

read and talk about their work, must at last become narrowed or consumed by it, and our calling has lost many a light that might have given a pure and lasting brightness, if it had been content to burn calmly and steadily.

But oh, what a host of the opposite character! sluggish and selfish souls, whose only aim seems to be to get on comfortably, to be popular, and to present a fair seeming with the least possible expenditure of effort. Keep pupils good natured and complacent, whether they do right or wrong, wink at deceits or positive vices, be sweetly patient with the lazy, believe in to-morrow as the panacea of all the mischiefs of to-day. Such is the ruling policy of some school rooms, a policy into which teachers are liable to be tempted by the ease-loving tendencies of the present age, and the impatience which both parents and children often manifest at the restraints of sound discipline.

There is an equally great variety of both theory and practice in regard to methods of instruction. You have all known the teacher or the committeeman who believed in making a course of study "practical," and whose notion of the practical we should suppose to have been modelled after Mr. Gradgrind's, except that he could by no possibility ever have made the acquaintance of any dignitary of fiction. There are teachers who educate only the memory, cleaving with a hold as strong as death to the *ipse dixit* of the text book, and requiring of pupils an equally close conformity thereto, going through the set round of the lesson, as some of us are required to use the Bible in school, "without note or comment."

And I know teachers on the other hand, who think it the correct style to discard text-books, and without any examination of a class upon the lesson which may have been prepared, to plunge at once into a stream of talk, which, though it may display the eloquence or varied information of the teacher, yet does little towards educating pupils in habits of diligence, precision and accurate expression. The fashionable theory of the present day is that every thing should be easy for the pupil, that knowledge must be made attractive, and the froward and the sluggish be tempted on with intellectual sweetmeats and spices, at whatever risks of digestion. Instead of the prompt brisk energy which ought to characterize every recitation, requiring each pupil to do his part, to be ready with information previously gained, or some new suggestion of the moment, you hear too often the drawing-out process carried on after this fashion, "The earth turns on its axis, does it not?" or, "Two and two make four, do they not, dear?" With such systems, I question whence are to spring the resolute, sturdy souls, accustomed to meet and vanquish difficulties, the strong, deep-thoughted men and women for whom are waiting the great issues of the future.

Would it be better then to dispense with theories altogether, and teach quite at hap-hazard? Oh no! The farmer who studies methods of cultivation, and observes seasons and soils and crops is not invariably successful, but more so than he who has no ideas at all. Do you remember the hoeing of Polly, as described in the "Summer in a Garden?" "It was patient, conscientious, even pathetic hoeing; but it was neither effective nor finished. When completed, the bed looked somewhat as if a hen had scratched it, there was that touching unevenness about it. To be sure, Polly smoothed it off with a rake, and asked me if it wasn't nice, and I said it was. It was not a favorable time for me to explain the difference between puttering hoeing, and the broad, free sweep of the instrument, which kills the weeds, spares the plants, and loosens the soil."

So there are teachers who putter diligently and conscientiously in their educational flower-beds, but root up no weeds, do no lasting work, and at best only make things look "nice."

In order to be successful, theories must be based on broad and strong foundations, on self-knowledge and knowledge of others, on genuine manliness and womanliness, on a desire to see and do the right, a spirit of justice, love and patience, and especially, that good sense and tact which can make these practically efficient in all emergencies.

THE TENDENCY OF THE TIMES.

BY MISS H. M. FREEMAN, MANSFIELD, CONN.

We live in a fast age. An age of steam and electricity; an age of enterprise and progress. Inventions and improvements are everywhere. The resources of our country are ample, and the skill and ingenuity of the people have made us what we are called, "Smart America." This progressive spirit has entered our schools. In our cities and large villages, handsome school houses are built, libraries, and all kinds of school apparatus are added, able teachers are provided, and the children are expected to become fine scholars as a matter of course. This is all very well. But we have fallen into the very grave error of educating the intellect

at the expense of the heart. We laugh at the simplicity of our fathers, but to their love of truth and faith in God, we owe our glorious inheritance, and whether this heritage, so costly and so dear, is to be enjoyed by future generations depends mainly upon this same love of truth, and faith in God instilled into the hearts of the children. When schools were first established in our land, religious instruction was a prominent element in them; now it is almost entirely left out: reading the scriptures is barely allowable, and the tendency is to cast the Bible out altogether.

Mere secular teaching trains the intellect, but leaves the higher and better part of our nature untrained. A fact we see illustrated in India, where the British government has established schools destitute of religious instruction. The consequence is, there have arisen a class of scholars educated out of their native religion into none; in fact a class of infidels. We have only to repeat the experiment in America to have a like result.

We are frequently told what should be the characteristics of a teacher.

"A splendid mathematician," "a perfect historian," "a walking encyclopedia," &c.; but a Christian heart is never thought of. The public do not care for it. As a people, we already hate to face religious truth, and if this indifference to an enlightened conscience goes on and increases as it has done, we have only to look at the politicians of New York city to see our future rulers. The very existence of our government depends upon a manhood and womanhood strong for truth and righteousness. Heart culture should be the foundation of our education. Without it, we are like a ship without ballast, sure to roll over, with the first breath of temptation; with it we are well praised, "thoroughly furnished into all good works."

History tells us that nations becoming wealthy, become voluptuous; and that luxuriousness tends to enervation, both physical and moral.

We have only to look about us to see which way we are drifting. No longer poor, we are in great danger of becoming corrupted throughout the length and breadth of our land from fast living. Hence, the greater necessity of fortifying the children against this tide of loose morals, by a thorough education in its broadest and highest sense.

Fellow teacher, did you ever, after laboring long and zealously with your scholars in daily lessons, suddenly miss a bright face from your class, and learn that your pupil had gone to a never-ending pupilage, and must live on forever and forever in happiness or in misery, clothed with glory, or with shame, concerning which you had never said a word? Did not your previous work look meagre and incomplete? Is it a small thing to deal with sentient beings, that must know even the experience of this world; that may be either bowed down with guilt and wretchedness, or may be upborne through a pure and beneficent career? Let us see to it, that we teach wisely, giving to every part of our nature that which it needs; then indeed we shall have truly educated men and women.

"GOD BLESS OUR SCHOOL."

BY SARA A. PECK.

About the room the Christmas greens
  In rich profusion hung,
While sparkling in their gilded dress
  Those graceful vines among,
Were fitting mottoes wrought with care,
  Each with its wealth of good,
And *this* of all that decked those walls
  The children's favorite stood—
    "God bless our school."

It glittered in the morning sun
  In characters of gold,
As beautiful at noontide hour,
  Like Truth that ne'er grows old;
What though the storms were fierce without,
  With low-hung clouds of gloom,
A halo crowned those sacred words,
  Its radiance filled the room—
    "God bless our school."

Once to my side a fair young child
  Came with her eyes of blue,
So full of light and innocence,
  Pure thoughts were there I knew.
"Teacher," said she, "I wonder so
  If it can really be,
That God who lives high up above
  Looks down from heaven to see,
    And bless our school."

Oh, what a fitting time to teach
  A sweet and holy truth,
To leave its impress deep engraved
  Upon the mind of youth!
I took the little hand in mine,
  Gazed in that childish face,
And told how He whose watchful love
  Abides in every place,
    Could bless our school;

And how not e'en a sparrow's fall,
  Not e'en a raven's cry,
Though small they seem, could e'er escape
  The notice of His eye.
The child-face glowed with happy smiles,
  "Ah! now I know," said she,
"If God loves e'en the little birds,
  He surely cares for me,
    And all our school."

O ye! unto whose tender care
These little ones are given,
Spurn not the thoughtful questionings,
But turn their hearts to Heaven.
And when ye twine about your rooms
The rich festoons of green,
There place among those graceful vines
These golden words to gleam—
"God bless our school."

ACTING SCHOOL VISITORS.

[NOTE.—The following article, a recent editorial in one of the youngest members of our Connecticut press, contains such wholesome thoughts on the subject in hand while indicating similar thoughtfulness and progress on other important educational topics, that we here give it to our readers.—EDS.]

The duties of this office are too onerous for any one to perform, whose regular business demands as much attention as most businesses do. Figures won't lie very often, so let us try a little arithmetic. The law requires that each school shall be visited twice each term. There are 13 districts in town, and counting the different departments that are to be found in several districts as so many schools, there are say 40 terms in a year requiring 80 visits. But some schools absolutely demand more than two visits each term. So it is safe to put the fewest visits that ought to be made at 100. If the schools are visited as they should be, and if we consider the distance from the center that many schools are, at least 100 half-days, or 50 days, need to be spent in this business—that is, *one-seventh part of the whole year.* The visitor is remunerated to the extent of about $125, most or all of which must go for horse hire if the "public functionary" is not able to keep a horse of his own. And if he is able he must feed it one-seventh part of the time for the town.

Where now is the difficulty about getting this work done? Clergymen are employed and salaried to do very different work, and not one of them can be school visitor without neglecting other duties. Most other men are dependent on their daily labor in their own callings for support, and cannot afford to spend their time in performing the duties of school visitor. Their business would suffer by it immensely.

To find a person qualified, willing, and having the necessary leisure, can not be done in many towns. What then is the remedy for all this? Hard to tell. One of three things might be done. The School Board might divide the town among them, each member attending to two or three districts. How advisable this course might be, we can not say. Or the town might pay a man sufficient to make it something of an object for one to spend his time in the requisite manner, or the law might be so changed as to give one man jurisdiction over the schools of several towns, with a salary from the State ample enough to enable him to give his whole time to the work. This last is the method adopted in the State of New York.

Under the present plan, either the schools or the ordinary duties of the school visitor, are improperly attended to, and this must of necessity be the case. If the present arrangement is continued, a salaried man only should be employed (supposing a man of means and leisure can not be found), for such an one's bread-and-butter is sure, but he should take the office only with the consent of those paying his salary, they having full understanding of the time necessary to devote to the work.

The amount of the whole matter is that cheap labor will and must be *cheap*, under ordinary circumstances. Once in a while one can be found who will work well for a pittance, and pay a good deal out of his own purse for the benefit of the public, but he is a *rara avis*, and ought to be. Our belief is that a thousand or two of taxpayers are better able to remunerate an official than he is to remunerate himself or work for nothing.

But before anything will be done in this direction, it is our belief that it will be necessary to abolish the present district system. Carry out the suggestion of the School Visitor on this point as made at town meeting last fall and published in the *Press*, then salary a man to attend to the schools as is necessary, and very possibly we may have first-rate schools all over town.—*The Bristol Press.*

The *Independent* has the following:—The school board of Pottsville, Penn., published an advertisement for a teacher, "all applicants to be examined, in addition to the common branches, in Algebra, in American literature, botany, geometry, constitution, trigonometry, surveying, geology, physiology, natural philosophy, chemistry, mineralogy, astronomy, and rhetoric"; for all which acquirements the magnificent sum of thirty-five dollars per month was to be paid any female teacher who would pass a favorable examination. The result was there were no female applicants; and the board then increased the salary one hundred per cent., and engaged the services of a man, without asking him to undergo any such examination.

Young Teachers' Department

HINTS TO YOUNG TEACHERS.

BY H. E. SAWYER, MIDDLETOWN.

Keep before your mind the true object of your work. There are two ways of looking at it. One makes it a business, a way of getting a living, or of advancing self-interest. Some teach temporarily, to obtain means for pursuing some other calling. Others, while not making it distinctly and purposely a stepping-stone to something else, continue in the work only because nothing more desirable opens to them. The position is respectable, the control of pupils gratifies a natural love of power, and the pay, if small, is sure.

These and similar considerations have sometimes led persons to become teachers selfishly.

The other view of your work makes it a mission a profession, a fine art, a labor of self-denial for the good of others. This will produce a very different style of government and instruction from that growing out of the former or selfish view.

That leads teachers to seek their own ease, to act on the principle which seems to govern, so generally, "work by the day;" namely, the most pay for the least work. This subordinates self-interest to the welfare of pupils, and asks, "What have I accomplished to day?" rather than "How much have I made?" It looks at ultimate results more than at immediate personal advantage.

The lawyer endeavors to gain a verdict, the physician to cure his patients, the pastor to secure the spiritual good of his parishioners. Each, except in rare cases of self-forgetfulness and devotion, has some regard for pecuniary compensation or personal advantage, and so may you have, but each must look mainly at the result to be gained, and so must you. That result is the right education, training, and culture of pupils for the duties of life. Schools are maintained for the good of pupils and of the State, not to furnish comfortable positions for teachers.

Our work is not like that of an artisan who files or hammers so many hours for so much money, under the direction of an overseer, perhaps not knowing or caring what is to become of the piece on which he works after it has left his hands. It is more that of an artist who sees in his imagination a beautiful form, and patiently, thoughtfully labors to represent it in picture or statue.

Your view of the work is fundamental, and will not only determine the general character of your government and instruction, but will also control many details of conduct and administration.

For example, shall monitors be employed? You have probably seen them in some schools standing near the teacher's desk, pencil in hand, to watch and note instances of whispering, turning in the seat, and similar misdemeanors. What was the purpose and object of the arrangement? To make the school easier for the teacher, or more profitable for the pupils?

If the good of the pupils is the reason for it, there still remains the question, "Is it beneficial in its results?"

Why do you favor the self-reporting system? Is it that you may have the credit of an orderly room and yet be relieved from the necessity of ceaseless vigilance to detect and check the beginnings of disorder, or is because you would in this way train your pupils to self-control, watchfulness and the habit of telling the exact truth even when it works to their present disadvantage?

If the latter, does it with the class of pupils you now have, secure the desired result? Does it cultivate truthfulness or lying? Does it develop conscience or break it down? Is the trial suited to the moral strength of those whom you expose to it?

Have you ever heard teachers scold, call pupils blockheads and stupid, and tell visitors, in their presence, "I have some of the worst scholars I ever saw?" Have you seen them angry, showing temper in face and voice? What was it for? What good did it do? How did it help the culture, physical, intellectual, or moral, of the pupils?

What would you say of a physician who should become angry with a patient because he was very sick, and should complain of the trouble he made? You will say the cases are not parallel, that it is the physician's business to deal with the sick, and if there were none his occupation would be gone. True, but is it not your business to deal with immaturity, ignorance, and perverseness, and would not your occupation be gone if there were no pupils needing patient, careful, wise training?

Suppose a gentleman has a garden prepared and stocked for the production of many varieties of fruits and vegetables. He employs to take charge of it one who professes to be competent, and supplies the requisite seeds, implements and fertilizers. At the proper season he calls for strawberries. The gardener says, "I can't make these vines bear. I've tried everything I could think

of, but they run just as they have a mind to, and I don't know what is the matter with them."

Will that satisfy the owner? Will he not answer, "You profess to understand your business, to be acquainted with the nature and habits of common plants. You ought to be able to discover and to remedy ordinary and remediable difficulties. I do not want excuses and complaints, but fruit. If you cannot produce it you must give place to one who can."

It would be childish or idiotic in the gardener to scold his plants or call them harsh names in anger because they did not thrive and fruit as he wished, for they are inanimate. Folly and cruelty would both be exhibited by a physician who should blame and threaten a patient for whom he prescribed yesterday because, contrary to his expectations, he finds him much worse to-day.

The physically diseased or deformed excite sympathy rather than anger: we treat them more tenderly than we do the robust and vigorous. Why not apply similar principles to your treatment of indolent, disorderly, and disobedient pupils? You say they are to blame for their actions; that they know better. Perhaps not. Prudence, judgment, conscience are developed gradually. Things that grieve you by their unwisdom or shock your cultivated moral sense may seem to some scholars allowable or innocent. You have no more right to expect complete moral than physical or intellectual development in your pupils.

But granting that they know better, and that they wilfully and outrageously rebel. Does that justify or excuse the slightest feeling of anger on your part? If the case demands "heroic treatment," decisive and severe measures, there is all the more necessity for a cool head and a steady hand.

You will be helped in your efforts to gain self-control by considering the unfortunate condition in which bad scholars are. Consider that some of them are ignorant of that which it most concerns them to know, the distinction between right and wrong; and that others, knowing the right, perversely choose the wrong. Which is more to be pitied and to be labored for in patience and self-forgetfulness, the intelligent, pure-minded cripple, or the stout boy who loves lying, profanity, impurity and theft?

THE METRIC SYSTEM.—No. 3.

BY EMMA M. GOLDTHWAITE.

The preceding articles on the Metric System will serve as an illustration of the method of teaching, the various topics and tables, the oral lesson upon each being written out minutely. I will therefore write the subject matter only of the remaining topics, leaving the teacher to make for himself the teaching exercise after the same plan as the first.

Our new subject is measures of volume. In order to show how each new unit and table is formed from the preceding one, I would, if possible, bring before the class a cubic meter. If that is not practicable, represent upon the board as large a cube as possible and suppose it to be a meter in length, width and height.

The next step is to show that a volume, whose length, breadth and height is one-tenth of a meter, or in other words a cubic decimeter, must have a volume equal to one-thousandth of a cubic meter. Thus proceeding we soon show that each denomination in measures of volume, is equal to one-thousand units of the last preceding denomination. Pupils may then form the table: One thousand cu. mm. equal one cu. cm., one thousand cu. cm. equal one cu. dcn., &c. The cubic meter is as we have said the unit of measures of volume, but when used in measuring wood and stone assumes another name and is subdivided differently. Its name is now stère (pronounced stare). One-tenth of a stère becomes a decistere, and ten stères equal a dekastere. In writing these denominations we allow only one place for each, as the increase is ten-fold. But in other measures of volume we must allow three places for each denomination, for the same reason that in measures of surface we allow two places. Thus, if we desire to express 225 cu. m., 3 cu. dcm. and 14 cu. cm., we should write it thus, 225.003014 cu. m. Reduction and the operations of addition, subtraction, multiplication and division are the same as regards principles as in measures of surface, but the ratio of increase being greater there must be a very slight variation in the actual process.

The unit of measures of capacity is the liter (pronounced leeter). An exact idea of the liter may be obtained by bringing before the class a box whose volume is a cubic decimeter. The capacity of this box is a liter. This liter is divided and subdivided into other units, each unit being one-tenth of the next higher. The table is formed like the table for long measure, and reads :—

10 milliliters	(ml.)	make	1 centiliter. (cl.)
10 centiliters		"	1 deciliter. (dcl.)
10 deciliters		"	1 *liter.* (L.)
10 liters		"	1 dekaliter. (dkl.)
10 dekaliters		"	1 hectoliter. (hl.)
10 hecto liters		"	1 kiloliter. (kl.)

All the principles and operations of measures of capacity are precisely like those in long measure.

The weight of a milliliter of distilled water in a vacuum gives us the unit of weights. Its name is gram.

The table is as follows :—

10 milligrams	(mg.)	make	1 centigram. (cg.)
10 centigrams		"	1 demgram. (dg.)
10 decigrams		"	1 gram. (g.)
10 grams		"	1 dekagram. (dkg.)
10 dekagrams		"	1 hectograms. (hg.)
10 hectograms		"	1 kilogram. (kg.)
10 kilograms		"	1 myriagram. (myg.)
10 myriagrams		"	1 quintal. (ql.)
10 quintals		"	1 tonneau. (ton.)

These denominations are written and used precisely as those of the last table.

In order still better to show the connection between the tables, a table of comparison may be formed. We have seen all through how the unit of each new table was formed in some way from some denomination of the table just before it. The meter is the unit of long measure, the square meter of measures of surface, and the cubic meter of measures of volume. The liter is the capacity of a cubic decimeter, and the gram is the weight of a milliliter of distilled water. The following table shows the connection nicely :—

Measures of volume.	Measures of Capacity.	Measures of Weight.
1 cubic meter.	1 kiloliter.	1 tonneau.
$\frac{1}{10}$ " "	1 hectoliter.	1 quintal.
$\frac{1}{100}$ " "	1 dekaliter.	1 myriagram.
1 " decimeter.	1 liter.	1 kilogram.
$\frac{1}{10}$ " "	1 deciliter.	1 hectogram.
$\frac{1}{100}$ " "	1 centiliter.	1 dekagram.
1 centimeter.	1 milliliter.	1 gram.

If this system be carefully studied, its beauty cannot but be appreciated. There are only five tables connected with it. It is simple and easily worked with, being constructed decimally. It can be a universal system, the unit being the same everywhere. The uniformity of the tables is another advantage, and the names in every case give us the exact multiple or part which the denomination is of the unit. I know of but one good objection to it as a system. There are many raised against it on the ground that it is new, and a change of any kind would be undesirable. But as a system, the only objection is that the meter is too long a measurement for ordinary use and the decimeter is too short. Our foot is the most convenient measurement for us, and there is no corresponding length in the Metric System.

Habit would I think make it as easy a matter for us to measure in decimeters, as it now is to measure in feet.

VALUABLE THOUGHTS FROM A SCHOOL REPORT.

1. It should be understood that school-teaching means *work*—assiduous, painstaking, wearisome work. The best teachers not unfrequently break down under the strain that is made upon their nervous system ; and few of this class would be able to endure it continuously eight or ten hours a day. There is no time to be idle during school hours, and but very little for being seated at ease. There is something always to be done ; not only is a general supervision to be maintained over the school at large, but *each pupil* is to be carefully watched and studied, his mind interested, and such help, encouragement, and discipline administered to him as he needs. It is not enough to call out young classes upon the floor and simply hear their lessons : they must be taught how to understand, how to use their books, how to study with satisfaction and pleasure in getting their lessons. Each child is to be dealt with, as far as possible, according to his individual peculiarity ; no two require to be treated exactly alike. All this, together with many untoward incidents that are continually occurring, demands that the teacher be wide awake, ever on the alert, moving quietly about, making his presence and inspiration everywhere felt, repressing the disorderly, spurring up the idle, encouraging the diligent, helping the halt, and keeping all busy, attentive and decorous. If any suppose that they are simply to play the gentleman or lady in teaching in school, we advise them not to undertake it. Nothing but earnest, enthusiastic work will succeed in this calling.

2. Be all alive to the business in hand, but never be in a hurry or flurry. Let the wheel whiz, but keep the boxes cool, else there will soon be fire and trouble. The spirits will chafe, impatience be ex-

cited, distraction ensue, and nothing will be done well and thoroughly as it should be. Take time to be perfectly calm and self-possessed, and to give the pupils opportunity to think and speak correctly, if they can. Undertake no more than what you can do well. One thing at a time.

3. In the teacher's vocation, whether pertaining to discipline or instruction, no subject is more important than that of securing the *undivided attention* of the pupil. Whether in teaching the branches of *study* or in requiring obedience to rules pertaining to *order*, it is indispensable that the teacher require the pupil to "look him straight in the eyes." You cannot be too particular, both in *study* and *recitation hours*, to keep the pupil's mind fixed on *one thing* during the time assigned. Little children must be taught this habit of attention while their minds are most susceptible to right impressions. But their endurance is small, and they must not be taxed beyond their strength. Still they should be exercised as they can endure, and thus their strength and endurance will increase. There are many ways of making the pupil "look straight in the teacher's eyes"; in other words, giving entire or undivided attention to any object or duty. 1st. Every scholar should have something to do during every hour of the day, and should be required to do it *in* that hour. *Study hours* should *be* study hours; nor should the teacher be indifferent whether they are strictly observed or not. If the teacher is *indifferent*, the pupils certainly will be, and almost entirely without blame. 2d. During recitation hour let it be a fixed law in your class that each pupil shall devote his whole attention to the teacher, or the recitations of the other members of the class." These suggestions by an experienced and distinguished educator are worthy of special consideration. 3d. The *school-room* should be kept as *neat* and *orderly* as possible, that habits of taste and tidiness may be cultivated in the children. They should be cautioned against bringing in needless mud or dust on their feet; and mats at the door would be an excellent reminder to them, and a protection to the floors. Flowers and festoons of evergreens are not out of place, but litter, and everything that is unbecoming should be disallowed. Playthings and eatables of all kinds, and whatever is calculated to divert attention, should be rigidly excluded in school hours.

REV. E. C. JONES, Southington.

What have you to expect at a hotel?—Inn attention.

MISCELLANY.

MECHANICS' COURSE OF LECTURES.

THE PRISMATIC SPECTRUM.

The twelfth lecture in the Mechanics' Course of Scientific Lectures was delivered on the evening of March 14th, by Mr. C. S. Hastings, on "The Prismatic Spectrum." The lecturer began by elucidating the theory of undulations; describing that of sound as a rectilinear vibration of air-molecules, taking place in the direction in which the sound moves; and that of light as a similar vibration of ether-molecules, taking place at right angles to the direction in which the light moves. The two kinds of waves were illustrated upon the screen by ingeniously contrived movable slides.

The lecturer then passed to the length of waves, first of sound, then of light, sounding a tuning fork giving actual waves of the precise length just thrown upon the screen. He showed that the pitch of a note depended upon its wave-length, and made the inquiry whether there might not be in light analogous effects due to different wave-lengths. To answer this question the course of a light-ray through various media was discussed. As in the case of sound, light waves of whatever length, moving in the same medium with the same uniform velocity, move always in a straight line. But when they enter a denser medium they are retarded in velocity. If the entrance be perpendicular, no other effect is produced; but if it be oblique then the ray is laterally displaced or refracted. An arrow drawn on a lightly smoked glass was thrown upon the screen, and a thick rectangular piece of glass was held across its center. No displacement of the arrow resulted, unless the glass was held obliquely to the course of the ray, when the arrow appeared broken, a central portion being laterally displaced. The cause of this refraction was explained by means of a diagram thrown on the screen, showing that a retardation took place, of that portion of the oblique beam which first struck the surface of the medium, so that when the portion last impinging arrived at this surface a change of front had been effected in the wave. This is illustrated by the common effect noticed when a platoon of soldiers on a quick march strikes a piece of rough ground obliquely. The effect of the shape of the medium was illustrated by a diagram showing a section of a triangular prism. In this case the ray after passing the medium, does not proceed in the same direction as before it entered it—as it does when the sides of the medium are parallel—but emerges in a direction still further removed from its original course. But this is not the only effect produced by the prism. The retardation being dependent upon the wave-length, waves of different lengths will be differently retarded, and therefore differently bent or refracted. If white light con-

tains waves of different lengths, then by passing this light through a prism the waves should be separated from each other, the longest waves being least bent and the shortest most bent. A beam of light from the lantern was then allowed to pass through a prism, and an exquisite colored image or prismatic spectrum appeared upon the screen, varying in color through red, orange, yellow, green, blue and indigo to violet. Color, then, corresponds to pitch in sound, the different colors, like the different tones, varying with the length of the wave. A movable diagram illustrated the difference of wave-length between the extremities of the spectrum, from which it appeared that the violet wave was about half the length of the red wave. Brewster reduced Newton's seven primary colors to three; but every color of the spectrum, since it is incapable of decomposition by the prism must be regarded as simple.

The character of the spectrum itself was then considered. It was shown by a remarkably delicate experiment—using a thermo-multiplier and a sensitive galvanometer—that the brighest part of the spectrum, viz., the yellow, had no heating power; but as the red end of the spectrum moved over the face of the pile the needle swung sensibly and reached its greatest deflection when the pile was exposed to the extreme ultra-red rays. In this part of the spectrum then, where the waves are the longest there is most heat; which indicates a greater amplitude in the long waves, since heat is most readily produced by the conversion of ordinary mechanical motion. The other or violet end of the spectrum was next considered. To show the peculiarity of these waves, which are so exceedingly short, two sensitized photographic plates, each under a separate negative, were exposed for fifteen seconds, one to the yellow the other to the blue rays. On developing and fixing the prints no image at all appeared on that which had been placed on the yellow; while on that exposed in the blue a diagram of the solar spectrum appeared with the curves of heat, light and chemical power. From this diagram, thrown on the screen by the lantern, the various properties of the spectrum were recapitulated. It was also shown that the ultra-blue rays which are entirely invisible, might be rendered visible by certain media. This constitutes the phenomenon of fluorescence.

The lecture was one of the most interesting of this excellent course. Though it was the lecturer's first effort in public, his delivery was easy and fluent, his manipulation precise and his experiments—most of which were original and ingenious, the diagrams for the lantern being especially so—eminently successful. His treatment of the subject was clear and he held the attention of the audience completely to the end.

GUNPOWDER.

An extra lecture in the above course was given Friday evening, March 22, by Capt. C. E. Dutton (Yale, '60) of the Ordnance Department of the United States Army upon "Gunpowder." The lecturer opened by stating the necessary requisitions of a material to be used with projectiles, and then showed how gunpowder fulfilled the conditions required. The different ingredients of gunpowder were then described and its mode of action was clearly explained. The part which each ingredient performs, and the reactions which take place when it is burned, were given with minuteness, and a brief account of the materials used in its construction was presented. The remainder of the hour was devoted to an explanation of what takes place when a cannon is fired. The present problem in gunnery is to obtain a powder that will give the greatest velocity to the projectile and at the same time not cause too great a strain upon the gun. The steps that have been taken toward solving this problem, and the attempts which have been made to remove the maximum strain from the breach towards the muzzle, by increasing the coarseness of the powder, and also giving it peculiar forms, were very forcibly and clearly stated. Also, the methods by which the strain, caused when a gun is fired, is measured, and how a knowledge of the strain in different parts of the gun is obtained, were explained and illustrated by diagrams. Different kinds of powder were shown and their peculiarities described.

The lecture combined the highest results of a scientific treatment of the subject, with an animated, clear and forcible delivery. It has rarely been our fortune to listen to a more entertaining or instructive lecture or to one in which truth was presented in a more agreeable form.

THE YELLOWSTONE NATIONAL PARK.

WHERE IT IS AND WHAT IT IS.

Almost every body who reads the newspapers has seen a great deal about the Valley of the Yellowstone, and has noticed the proposal in Congress to set apart forever a portion of the same as the "Yellowstone National Park;" but with the ordinary maps of our schools and dwellings, and indeed with the more elaborate maps of the engineer department in Washington, it is not easy to fix the site of the geysers, springs, rivulets and peaks of this wonderful region. We propose to help the owner of an ordinary atlas to understand the location of this much talked of park, in its relation to the physical geography of the Upper Missouri. Let the reader then take up his map of the Western United States, and allow us to point out the site.

Since the early days when Lewis and Clark climbed over the great "Divide" between the waters of the Atlantic and Pacific, our maps have indicated three mountain streams of their naming,—the Jefferson, Madison, and Gallatin, which flow together and constitute the Upper Missouri. A few miles north of their confluence is the thriving town of Helena, capital of the terri-

tory of Montana, the home of more than three thousand persons, and the ordinary base of departure for explorations in this region. On all our recent maps this town of Helena is a land mark quickly spotted.

The three Missouri tributaries are separated by high hills on their west from the streams which run into the Columbia, and on their east, from the Valley of the Yellowstone. Let us come to this region from another direction. Near the western central-border of what is now misnamed the territory of "Wyoming," is that lofty peak once supposed to be the highest of the Rocky Mountains, and which still bears the name of the Pathfinder,—"Fremont." North of this peak, on the eastern side of the "Wind River Mountain," and in the northwest corner of the territory, lies the Yellowstone Lake, a mountain basin, between seven and eight thousand feet above the sea, or more than a thousand feet above Mount Washington, in New Hampshire. Its shape is quite irregular (several bays or arms projecting into the land), and its extreme length is not much more than twenty miles. On the south, the lake is fed by a stream called the Upper Yellowstone; on the north emerges the Yellowstone proper, which runs a little west of north for nearly one hundred miles, and then veers off to the east, parallel to the Missouri, which it joins on the boundary line of Montana and Dakota, a confluence marked by the site of Fort Buford. The region of extraordinary interest is from the northern outlet of the lake to the eastward turn in the river, where "Boteler's" ranch, a name referred to by all the travellers, is situated. The descent from the lake to the open valley below "Boteler's" is a fall of about 2,500 feet, marked by some of the most wonderful and beautiful scenery of the Continent. High ranges of mountains shut in the water course; "Emigrant Peak" on the right bank having a reputed height of 10,629 feet; and Mount Washburne on the left bank a height of 10,575 feet. There are not only these lofty upheavals, but the erosion of the river has cut out deep cañons, three in number.

If it were possible to descend the river from the northern outlet of the lake, we should soon pass through a region of hot springs, then over the upper and the lower falls, the one 115 feet in height, the other 350 feet. After passing the second fall, we should enter at once the Grand Cañon, a passage of about twelve miles in length, the walls of which are from ten to fifteen hundred feet high; then winding around the base of the Washburne, we should come upon a second longer but more open cañon. After the Yellowstone has received the waters of Gardiner's River on the left, and of other streams on right and left, we should enter a third less difficult cañon, winding around the "Emigrant peak" on the right, and after passing "Boteler's," just below the eastern turn in the stream, we should part from the extraordinary scenery and enter upon the more quiet and open landscape of the middle course.

Retracing our course to the Yellowstone Lake we find its waters are but a few miles east of a smaller lake (not indicated on every map), from which a tributary of the Madison River takes its rise. From this little lake which is called "Madison Lake," to the Madison River proper, the stream bears the name of "Fire Hole River." It traverses the two famous Geyser basins of which so much has recently been written. Still a little farther west and south, we come upon streams which run into the Snake River and so, through the Columbia, seek repose in the Pacific.

The park, now where is that? The proposed "Park" is a square tract, in the northwest corner of Wyoming, nearly fifty miles broad by sixty long, lying chiefly south of the 45th parallel and east of the 11th meridian. It will include the Yellowstone Lake, the hot springs at its outlet, the Upper and Lower Falls, the Grand Cañon and the Middle Cañon. It will also include the Fire Hole Valley of the Madison River. This region is not favorable for agriculture or for ordinary homesteads, but it is likely to become more and more a place of resort for those who are interested in natural wonders, as the Falls of Niagara, and the Yosemite Valley. Hence the wisdom of Congress in perpetually reserving it from the hands of speculators.

Whether or not the Yellowstone Lake is the crater of an extinct volcano, it is certain that the entire region is characterised by volcanic phenomena, hot springs, geysers, ejections of mud and steam, volcanic rocks and deposits, etc. It is not a part of our present purpose to describe the scenery or these phenomena. Those who are interested in them can readily find the stories of the Washburne-Langford explorations, in *Scribner* and the *Overland*, the recent report of Capt. Barlowe of the U. S. Engineers, and the preliminary report of Dr. F. V. Hayden, published with some excellent local maps in the February and March numbers of the *American Journal of Science*. In the next number of that journal a special map of the "Park" will appear.

THE TRANSIT OF VENUS IN 1874.

Perhaps there is no datum of astronomical science which is of more fundamental importance than the sun's distance. It is the measuring unit by which space itself is gauged, and the plummet line used in sounding the celestial depths. A trifling error in this distance, when multiplied by the immense remoteness of a fixed star, becomes enormous; an error of one-hundredth of the whole causing a difference of 200,000 miles in the distance of even the nearest fixed star. It is of the utmost importance, therefore, not only to pure astronomy as a science, but also to applied astronomy — the art by which navigation has been made certain, and by which the measurements of coast surveys and the determinations of longitude have been made exact—that this distance be accurately determined.

But not only this. One of the most accurate of the methods in use for measuring the velocity of light is by noting the time it takes a light-ray to cross the earth's orbit, and then dividing the diameter of this orbit by this number. Jupiter's satellites are eclipsed by their primary about 8 minutes sooner when the earth and Jupiter are on the same side of the sun, than when they are on opposite sides; hence it takes light 8 minutes to cross the earth's orbit. Evidently then, upon the value determined for this orbit, depends the velocity of light. But this is one of the fundamental data of physical science. Optics deduces not only the theory of light itself from this datum, but founds upon it many of those principles which, having been applied in practical life, have been the means of advancing our civilization and increasing our wealth.

It must now be clear that, even considered in a purely economical point of view, the precise determination of the sun's distance is a necessity of science. Now, of the four known methods of making this measurement, the most promising is that based on a careful determination of the position of Venus on the sun's disk, during a transit of that planet, by two or more observers stationed widely apart on the earth's surface. The parallax or angular distance of the planet's position as thus measured, gives data by which the solar distance may be calculated. But these transits of Venus are very rare occurrences. The last one took place in 1769; and another as favorable will not occur for another century. Two, however, are to take place before long, one in 1874 the other in 1882. Though unfavorable as regards certain methods of measurement, they are favorable for others; so that, varying their methods, astronomers are planning the most delicate observations on the transit of 1874. It may here be observed that the importance of new measurements appears from the fact that the best determinations thus far made differ by three or four per cent. of the whole; a large quantity when applied to celestial distances.

This importance has been already recognized more or less fully by all the civilized nations of Europe. As long ago as 1857, England began to move in the matter. Experiments were made and plans were proposed and tested, for obtaining the best results; and in 1869, £15,500 were granted by the Government, the stations were selected, and the expeditions arranged. Prussia has planned a series of observations with great liberality; and a commission, made up of her best astronomers, has the matter now in charge. France moved in the matter before the war which has resulted so disastrously. Since its close the preparations have been continued and are to be liberally sustained by the Government. But until within a fortnight—excepting suggestions from several astronomers—nothing has been done in this country in the way of preparation to observe this transit. Early in the present month a memorial was presented to a Committee of Congress, signed by Professor Henry, by the men of science connected with the Smithsonian Institution, and by the astronomers of the Naval Observatory, urging that an appropriation of $150,000 be made to enable them to make this rare opportunity available to science. Their proposition is to use the navy for this purpose, sending such vessels as can be spared, equipped with the necessary observers and instruments, to such points in the Indian and Pacific Oceans as shall seem most desirable. It is already late to begin these preparations. Men must be trained, methods—especially the photographic—must be tested, instruments must be constructed, and equipments provided. Concerted observations must also be agreed upon and duties carefully assigned to each individual of the observing parties. All this requires time; but with proper means given by Congress, it may be done and done satisfactorily. In this way, a well won reputation for liberality to science, acquired by the appropriations made in recent years for observing solar eclipses, which have yielded results of great value to science, may be sustained.

TUFTS COLLEGE.

ITS NEW DORMITORY AND ITS PROSPECTS.

The new hall commenced in the Spring of 1871 is at length completed. It stands as a new evidence of the prosperity of this young institution and also of the wisdom of that policy, which has nevertheless often called forth the discontent of student and alumnus in not gratifying their ambitious yet loyal desire to see their alma mater amply provided with buildings. The policy has been not to spend money extensively in this field until the expense could be met without crippling the institution so seriously in other directions. Had the corporation built before, not only would that danger have been incurred, but it would never have dared think of erecting simply as a dormitory such an edifice as has just been received from the hands of the builders. The expense of the building will not fall far one side or the other of $50,000. As the attempt has been made to construct a model building of its sort—at least so far as the interior is concerned—it may be of interest to describe it somewhat in detail.

The material is a handsome faced brick with trimmings of Ohio sandstone. The building is rectangular, 120 feet long by about 43 feet wide, consisting of three clear stories and an attic with large dormer windows which allows very good rooms, since the pitch of the roof is quite steep. At the four corners the roof breaks into pyramidal spires, about 12 feet square at the base, rising to about the height of the ridge pole. In these also are large ornamental dormer windows. In the centre of the front and rear walls, the brick work is carried higher, forming here a sort of dormer effect, where the roof again is broken and rises somewhat higher than

the ridge of the building, in form of a wedge, whose edge is about half the base. The whole, main roof, spire and wedges, is slated, and surmounted by ornamental iron crest-work. The effect of this odd roof is at least striking. The entrances, two front and two rear, are through covered porches, in simple Gothic style, in which the Ohio stone forms a prominent element. The arch principle is freely employed in the doors and windows.

The structure is divided transversely into two distinct halves by a solid brick wall, and each half is strengthened by two parallel brick partitions, pierced for doors on either side of the entry. In each half, on each floor, are four suites of rooms. Each suite consists of a study 18×14 feet, with a good closet, and a bed-room 16×9½ with a large closet 9½×4. These rooms are high and airy, those on the first floor, being 12 feet in the clear. There has been no paint employed on the interior. The whole finish of the building from basement to attic is a handsomely filled brown ash. All the rooms are wainscotted with the same. They are excellently lighted and ventilated, the windows being ample and glazed two panes to a sash. Each study has an open fire-place and marble mantel. The first floor is some four feet above the ground in front, and rather more in the rear, allowing a well lighted basement. Here are conveniences seldom found in buildings of this character. In either side are wash rooms, with numerous marble basins, three bathing rooms, supplied with hot and cold water, and water-closet. Water is introduced from the reservoir of the Charlestown water-works, but a few yards distant, the blue surface of which gives a pleasant water view, even from the first story windows. The general view from any of the windows is unsurpassed, the hill whose summit this building crowns, giving a view of the whole vicinity of Boston, an average radius of six or eight miles.

The annual rental of these apartments is especially worthy of remark. Notwithstanding the cost of the building, they will rent for probably $60, thirty dollars each, where two students room together. A similar style of apartment, in one of the new halls at Harvard rents, we are told, for $250. The price of room rent will furnish a commentary on the statement that a young man can pass his four years comfortably at Tufts with an outlay of from $400 to $450 annually. Board in the students own club, its officers and steward being of their own number and responsible only to them, is $3.50 per week, and is reported to be excellent.

It is safe to predict that the erection of this really elegant building is the beginning of a period of activity in this direction. A new building, to be devoted especially to the natural sciences, to be built from the Walker mathematical foundation, is already projected. A gymnasium will probably precede it.

The present endowment of Tufts falls but little short of $1,000,000. Like all other institutions, it feels itself poor even with this comparatively generous property, for such is the constantly increasing demand upon our highest institutions of learning, that the years which bring generous additions to the endowment, also strengthen the conviction of the difficulty of supplying these demands with anything less than unlimited resources. It is certain, however, that with its future assured by a fund, that twenty years ago would have seemed princely, the young Massachusetts college feels within itself the force and will to do liberally for its students, in what pertains to physical comfort and intellectual culture.

THE AMERICAN SYSTEM OF PUBLIC INSTRUCTION.

The original draft of the following statement in reference to the American system of public instruction was prepared in answer to a call from Mr. Mori, Japanese Minister at Washington, by Prof. D. C. Gilman, of Yale College. Mr. Mori applied to Rev. Birdsey G. Northrop, who, as is well known, has received a call from the same source to take charge of the public instruction of the Japanese empire, for an authoritative statement of this kind, and in answer to this application the annexed document has been prepared. In order to secure accuracy, completeness, and a just regard to various opinions, the original draft of this statement was put in type and sent as a proof-sheet to the Presidents of Harvard, Yale, Dartmouth, Williams, and other New England colleges. It was brought to the notice of some of our Senators and Representatives in Congress; it received the supervision of various gentlemen personally concerned in the administration of school systems; the exponents of various religious bodies were consulted in regard to it, and the comments of all these parties when received were carefully collated. There were no differences of opinion on essential points. In some important particulars, the phraseology was improved. Ex-Gov. Emory Washburne, who is especially conversant with the school systems of New England, gave a very searching scrutiny to every turn of every sentence. His successor, the present Governor Washburne, of Massachusetts, also made two or three important suggestions. The criticisms of President Porter and President Eliot upon the college and university paragraphs were very well put, and are embodied in the phraseology now employed. Many other gentlemen of like intelligence might be quoted — such as Dr. McCosh, Senator Buckingham, Representatives Dawes and Hoar, Hon. A. D. White, and others—but the object of these allusions is simply to lift the statement above the form of an individual expression of opinion.

In preparing this summary, the effort has been made to state only those principles which are essential to the system and are everywhere recognized. The local

peculiarities of different parts of the country are only alluded to in a subordinate manner. An endeavor has also been made to state facts, rather than theories or doctrines, and to keep the language wholly free from personal, provincial, political, or ecclesiastical prejudices. The men whose names are appended to the document have all endorsed it as a trustworthy statement of our public instruction. It is expected that it will be translated into Japanese and circulated among the officials of that empire. The following is the statement:

I. EDUCATION UNIVERSAL.

The American people maintain in every State a system of education which begins with the infant or primary school and goes on to the Grammar and High Schools. These are called "Public Schools," and are supported chiefly by voluntary taxation, and partly by the income of funds derived from the sale of government lands, or from the gifts of individuals.

II. PUBLIC SCHOOLS HAVE BEEN TRIED FOR 250 YEARS.

Their estimate of the value of education is based upon an experience of nearly two centuries and a half, from the earliest settlement of New England, when public schools, high schools, and colleges were established in a region which was then almost a wilderness. The general principles then recognized are still approved in the older portions of the country, and are adopted in every new State and Territory which enters the Union.

III. THE WELL KNOWN ADVANTAGES OF EDUCATION.

It is universally conceded that a good system of education fosters virtue, truth, submission to authority, enterprise and thrift, and thereby promotes national prosperity and power; on the other hand, that ignorance tends to laziness, poverty, vice, crime, riot, and consequently to national weakness.

IV. STATE ACTION INDISPENSABLE.

Universal education cannot be secured without aid from the public authorities; or in other words the State, for its own protection and progress, should see that public schools are established in which at least the rudiments of an education may be acquired by every boy and girl.

V. THE SCHOOLS ARE FREE, ARE OPEN TO ALL, AND GIVE MORAL NOT SECTARIAN LESSONS.

The schools thus carried on by the public, for the public, are (*a*) free from charges for tuition; (*b*) they are open to children from all classes in society; and (*c*) no attempt is authorized to teach in them the peculiar doctrines of any religious body, though the Bible is generally read in the schools as the basis of morality; and (*d*) the universal virtues, truth, obedience, industry, reverence, patriotism and unselfishness, are constantly inculcated.

VI. PRIVATE SCHOOLS ALLOWED AND PROTECTED BY LAW.

While Public Schools are established everywhere, the government allows the largest liberty to Private Schools. Individuals, societies, and churches are free to open schools and receive freely any who will come to them, and in the exercise of this right, they are assured of the most sacred protection of the laws.

VII. SPECIAL SCHOOLS FOR SPECIAL CASES.

Special schools for special cases are often provided, particularly in the large towns; for example, Evening Schools for those who are at work by day; Truant Schools for unruly and irregular children; Normal Schools for training the local teachers; High Schools for advanced instructions; Drawing Schools for mechanics, and Industrial Schools for teaching the elements of useful trades.

VIII. LOCAL RESPONSIBILITY UNDER STATE SUPERVISION.

In School matters as in other public business, the responsibilities are distributed and are brought as much as possible to the people. The federal government being a Union of many States, leaves to them the control of public instruction. The several States mark out, each for itself, the general principles to be followed and exercise a general supervision over the workings of the system; subordinate districts or towns determine and carry out the details of the system.

IX. UNIVERSITIES AND COLLEGES ESSENTIAL.

Institutions of the highest class, such as universities, colleges, schools of science, etc., are in a few of the States maintained at the public expense; in most they are supported by endowments under the direction of private corporations which are exempted from taxation. Consequently, where tuition is charged the rate is always low. They are regarded as essential to the welfare of the land, and are everywhere protected and encouraged by favorable laws and charters.

The above summary of the American System of Public Instruction has been endorsed by the following gentlemen:

Noah Porter, D.D., LL.D., President of Yale College.
T. D. Woolsey, D.D., LL.D., Ex-President of Yale College.
Charles W. Eliot, LL.D., President of Harvard University.
James McCosh, D.D., LL.D., President of College of New Jersey.
Asa D. Smith, D.D., LL.D., President of Dartmouth College.
Mark Hopkins, D.D., LL.D., President of Williams College.
J. L. Chamberlain, LL.D., President of Bowdoin College.
S. G. Brown, D.D., LL.D., President of Hamilton College.
W. A. Stearns D.D., LL D., President of Amherst College.
Joseph Cummings, D.D., LL.D., President of Wesleyan University.
Abner Jackson, D.D., LL.D., President of Trinity College.
H. D. Kitchtell, D.D., President of Middlebury College.
Alexis Caswell, D.D., LL.D., President of Brown University.
M. H. Buckham, President of Vermont University.
A. A. Miner, D.D., President of Tufts College.
J. T. Champlin, D.D., President of Colby University.
James B. Angell, President of Michigan University.
A. D. White, LL.D., President of Cornell University.
W. H. Campbell, D.D., LL.D., President of Rutgers College.
W. W. Folwell, President of the University of Minnesota.
D. C. Gilman, Professor in Yale College.
Hon. Warren Johnson, Superintendent Public Instruction, Maine.

Hon. J. W. Simonds, Superintendent Public Instruction, New Hampshire.
Hon. J. S. French, Superintendent Public Instruction, Vermont.
Hon. Joseph White, Superintendent Public Instruction, Massachusetts.
Hon. T. W. Bicknell, Superintendent Public Instruction, Rhode Island.
Hon. B. G. Northrop, Superintendent Public School Instruction, Connecticut.
Hon. A. B. Weaver, Superintendent Public School Instruction, New York.
Hon. E. A. Apgar, Superintendent Public School Iustruction, New Jersey.
Hon. J. P. Wickersham, Superintendent Public School Instruction, Pennsylvania.
Hon. Newton Bateman, Superintendent Public School Instruction Illinois.
Hon. Oramel Hosford, Superintendent Public School Instruction, Michigan.
Hon. Thomas W. Harvey, Superintendent Public Instruction, Ohio.
Hon. E. E. White, Ex-Superintendent Public Instruction, Ohio.
Hon. M. B. Hopkins, Superintendent Public Instruction, Indiana.
Hon. Samuel Fallows, Superintendent Public Instruction, Wisconsin.
Hon. H. B. Wilson, Superintendent Public Instruction, Minnesota.
Hon. Alonzo Abernethy, Superintendent Public Instruction, Iowa.
Hon. John Monteith, Superintendent Public Instruction, Missouri.
Hon. H. D. McCarty, Superintendent Public Instruction, Kansas.
Hon. M. A. Newell, Superintendent Public Instruction, Maryland.
Hon. Gustavus J. Orr, Superintendent Public Instruction, Georgia.
Hon. J. D. Philbrick, Superintendent Public Instruction, Boston.
Hon. J. L. Pickard, Superintendent Public Instruction, Chicago.
Hon. Peter Parker, ex-Minister to China.
Ex-Gov. Emory Washburn, Professor in Harvard Law School.
George B. Emerson, LL.D., Boston.
Hon. Henry Wilson, United States Senator.
Hon. J. W. Patterson, United States Senator.
Hon. W. A. Buckingham, United States Senator.
Hon. O. S. Ferry, United States Senator.
Hon. F. T. Frelinghuysen, United States Senator.
Hon. H. L. Dawes, Representative in Congress.
Hon. N. P. Banks, Representative in Congress.
Hon. Marshall Jewell, Governor of Connecticut.
Hon. James E. English, ex-Governor of Connecticut.
Hon. Joseph R. Hawley, ex-Governor of Connecticut.
Hon. W. B. Washburn, Governor of Massachusetts.
Hon. William Clafin, ex-Governor of Massachusetts.
Hon. Henry Barnard, Late U. S. Commissioner of Education.
Barnas Sears, D.D., Agent of Peabody Educational Fund.
S. C. Jackson, D.D., Assist. Sec. Mass. Board of Education.
Selah B. Treat, D.D., Secretary A. B. C. F. M.
N. G. Clark, D.D., Secretary A. B. C. F. M.
E. W. Gilman, Secretary A. B. S.

THE MISSISSIPPI RUNNING UP HILL.—It has been demonstrated that our earth is not a globe but a spheroid, that is, geometrically speaking, a body formed by the revolution of an ellipse around its shorter axis; hence the statement in the geographical text books that the earth is flattened at the poles. The amount of the flattening is, in round numbers, only about $\frac{1}{300}$ of the diameter, and thus next to imperceptible in a terrestrial globe of the ordinary size, being only one twentieth of an inch, or the thickness of a card board in a globe of 15 inches; therefore, no account is taken of this in the making up of globes. But if we consider that the earth is quite a large globe, being not less than 8,000 miles in diameter, a flattening amounting to $\frac{1}{300}$ is about 27 miles—that is to say, the polar axis is 27 miles shorter than the equatorial diameter. Consequently, the polar radius is 13·5 miles shorter, and the people at the pole are 13·5 miles nearer to the earth's center than those at the equator. If now, for simplicity's sake, we accept that the distance from the center increases in the same ratio that the latitude decreases (which is near enough to the truth for our purposes), the people at 30° latitude must be 13·5÷3 or 4·5 miles nearer to the earth's center than those at the equator; and those at 50° latitude must be 50°+13·5÷90°, or 7·5 miles nearer to the center. Therefore, at 50° we are 7·5—4·5 or 3 miles nearer to the earth's center than at 30°. The first latitude, 50°, corresponds nearly with the sources of the Missouri and Mississippi, while the latter, 30°, corresponds with its mouth. The mouth is thus 3 miles, or some 16,000 feet higher than its source, if the latter were reduced to the ocean-level of the spheroidal earth. As, however, the plateau in which the river has its origin is almost 8,000 feet high we have to subtract this, and we find that the uphill movement is still at least 8,000 feet; and, as it is some 4,000 miles long, the river runs about two feet per mile uphill.

The lower southern portion of this river is at least 8,000 feet higher than the upper northern part; but we remark in closing that this whole reasoning, about which some years ago there was quite an excitement among semi-scientific circles, rests on a false conception of that which we call uphill. If we mean by this expression to go further from the earth's center it would be all strictly correct; but we must not take the earth's center as the basis to refer to, but the actual ocean level, whether its form be spherical, spheroidal, or otherwise, and call only that uphill that goes farther above at the ocean level. In this view of the case the river in question, in starting at its source west of Lake Superior, at a height of some 8,000 feet above the ocean level, and reaching this level below New Orleans, descends on an average some two feet per mile, and in reality runs down hill as all rivers are bound to do.—*Manufacturer and Builder.*

PUNCTUATION.—There is great carelessness, if not ignorance, in the matter of punctuation, whereby much misunderstanding arises. Many persons even, emulate the ancient writers in leaving out all marks or divisions of any kind, like the barber who wrote over his door, "What do you think I shave you for nothing and give you a drink," which was interpreted by some to imply an easy shave and a morning tipple to be got for the asking. Such, however, was not the meaning of our worthy tonsor, who, on being arraigned before the magistrate for what seemed a clear case of deception, exclaimed, "What! do you think I shave you for nothing and give you a drink?" Points were first used by Aristophanes, a grammarian of Alexandria, 200 years B. C., but were not generally used until the modern

system was introduced at the beginning of the sixteenth century by a learned printer of Venice named Manutius. Punctuation not only serves to make an author's meaning plain, but often saves it from being entirely misconceived. And there are many cases where a change of points completely alters the sentiment. The following anecdote of an English statesman, who once took advantage of this fact to free himself from an embarrassing position, is an amusing illustration:

Having charged an officer of the government with dishonesty, he was required by Parliament, under a heavy penalty, publicly to retract the accusation in the House of Commons. At the appointed time he appeared with a written recantation, which he read aloud as follows: "I said he was dishonest, it is true; and I am sorry for it." This was satisfactory; but what was the surprise of Parliament the following day to see the retraction printed in the papers thus: "I said he was dishonest; it is true, and I am sorry for it." By a simple transposition of the comma and semicolon, the ingenious slanderer represented himself to the country, not only as having made no recantation, but even of affirming his charge.

MEERCSHAUM.—At the Berlin Geographical Society's December meeting, M. Ziegler described the sources whence the considerable annual supply of meerschaum for meerschaum pipes is derived. Large quantities of this mineral, so highly esteemed by smokers, comes from Hrubschitz, and Oslawan in Austrian Moravia, where it is found embedded between thick strata of serpentine rock. It is found also in Spain at Esconche, Vallecos, and Soledo; the best, however, comes from Asia Minor. The chief places are the celebrated meerschaum mines from 6 to 8 miles southeast of Eskischehr, on the river Pursak, chief tributary to the river Sagarius. They were known to Xenophon, and they are now worked principally by American Christians, who sink narrow pits, to the beds of this mineral, and work the sides out until water or imminent danger drives them away to try another place. Some meerschaum comes from Brussa, and in 1869 over 3,000 boxes of raw material were imported from Asia-Minor at Trieste, worth 345,000 florins. The pipe manufacture and carving is principally carried on in Vienna and in Ruhla, Duchy of Saxe-Coburg-Gotha. The commercial value of meerschaum carvings at these places may be estimated at $2,000,000 annually. However, very large quantities of them are not made from genuine but from artificial material. The waste from these carvings is ground to a very fine powder, and then boiled with linseed oil and alum. When this mixture has sufficient cohesion, it is cast in molds and carefully dried and carved, as if these blocks of mineral had been natural. It is said that about one half of all pipes now sold are made from artificial meerschaum.—*Scientific American.*

AN ARCTIC STOVE.—When the last German Arctic Expedition started for the North Pole, it carried a newly invented stove, by Professor Meidinger, which would have rejoiced the heart of Count Rumford, and has proved an invaluable invention. It is of iron, having a double wall, with a space about two inches wide between the outer and inner walls, to which the air has free access above and below. The cold air being always at the bottom, and the warm ascending, it follows that all the air in the room is being constantly forced through the space between the outer and inner covering of the stove, or what is the same, is being constantly heated. The coal is put in from the top, and fills the whole inside of the stove, which is about six feet high, more or less. It is then lighted at the top and kept burning by the draught created by valves inserted both into side walls and at the bottom of the stove. The valves opened, the greater the heat, so that the temperature can be easily regulated. The expense is a third less than that of an ordinary German stove, and the new invention, in an elegant shape, is rapidly finding its way into dwelling houses.

THE STEREOSCOPE.—The following story is told of the first introduction of the stereoscope to the *savans* of France. The Abbe Moigno took the instrument to Arago, and tried to interest him in it; but Arago unluckily had a defect of vision that made him see double, so that in looking into the stereoscope he saw only a medley of four pictures. The Abbe then went to Savat, but he was quite incapable of appreciating the thing, for he had but one eye. Becquerel was next visited, but he was nearly blind, and consequently cared but little for the new optical toy. The Abbe, not discouraged, called next upon Pouilette, of the Conservatoire des Arts et Metiers. He was a good deal interested in the description of the apparatus, but unfortunately, he squinted, and, therefore, could see nothing in it but a blurred mixture of images. Under the circumstances, the wonder is that the stereoscope ever got fairly into France; but at the beginning of the year 1870, its manufacture had reached a monetary value there of $250,000 per annum.

President Paul A. Chadbourne, who has been elected the successor of Dr. Hopkins, is a graduate of Williams, of the class of 1848; he studied theology in the East Windsor Seminary; in 1853 became Professor in Williams; in 1858 in Bowdoin, and subsequently President of Madison University.

It is said that the last picture painted by the late Professor Samuel F. B. Morse, and which hung in the drawing-room of Locust Grove, his beautiful domain on the Hudson, is an admirable full-length portrait of his daughter.

THE CONN. SCHOOL JOURNAL.

NEW HAVEN, MAY, 1872.

EDITORIAL.

High above the art of using our noble language grammatically, is the art of using it with that chaste simplicity which is always a condition of its greatest force. It would seem to be the duty of every educated man, having acquired habits of correct grammatical usage, to pay attention at once and through life, if need be, to the loftier and more delicate work of cultivating clearness, terseness, pointedness and simplicity of style.

To teachers, this is one of the plainest of duties; one of their chief prerogatives is to mold intentionally or unconsciously the diction of hundreds of growing minds. They should blush to be anything short of experts themselves; and faithful study will make them such. We do not mean that by study all teachers can attain the success of powerful writers; for diversity in natural gifts will compel diversity in the results; but we do mean that every teacher can increase greatly his mastery over expression and become comparatively faultless in style, by making this a matter of conscientious study.

How shall this study be conducted? Chiefly, we believe, by close and continuous observation of the language of those who are entitled to be considered models. Models of excellence, of course? No, not necessarily; the Spartans we remember found it profitable to teach their children temperance, not by making them gaze at some very proper temperance man, but by disgusting them with the follies of a drunkard. Those will appreciate the clear waters of our springs the best, who have been obliged for awhile to drink the dreggy waters of the Missouri. While we should mainly drink from the clearest fountains, a little dash of the muddy sometimes quickens our discriminating powers.

Here, for instance is an instructive example, fresh and strong, showing "How not to do it." During the last month of March, a warm debate was at one time carried on in the Massachusetts House of Representatives upon a pending railroad bill. At last the chaplain of the house, Rev. Mr. Cudworth, took up the cudgels in its behalf, in his prayer at the opening of a morning session. This prayer gives us of course his idea of the style of language best calculated to impress Him to whom all languages are as one. Thus he prayed: "All thy works praise thee, Architect Divine, in all places of thy dominion: We rejoice before thee to-day, that although fire and water mingled, produce antagonism, we derive power and progress most promotive of human welfare, and we pray amid the fire and water of opposing convictions touching a great common interest under consideration, that the throttle-valve of circumstance may start a power among us which shall force the driving-wheel of human good until that great democratic terminus is reached—the greatest good of the greatest number, amen."

"In the name of the prophet, figs!" Such swelling words are not the rising of a full stream of forceful thought; they are only the bubbling up of foam and froth which their unfortunate author has mistaken for eloquence. That they were unworthy of our noble language, unbecoming toward the assembled body of legislators, and especially disrespectful to the Divine Being who should be addressed with the utmost simplicity, is too painfully evident. Certainly in prayer, if anywhere, pure simplicity is demanded. To try to catch the approval of the Almighty by words adroitly arranged is as unbecoming as futile. To attempt this and then bungle over it is to make oneself a laughing stock to the world.

This has been already the result of Chaplin Cudworth's performance. His prayer has been published as an instance of execrable taste throughout the length and breadth of the land. We are sorry for him, for happening to be acquainted with him, we know that he is a warm-hearted, worthy man.

But the difficulty in his case, and the very one which we are urging our teachers carefully to avoid, is an utter disregard of the correct principles of taste, fitness and power in the use of language. In this particular instance, as if something were yet needed to demonstrate fully his eminent incapacity to understand fitness and propriety, this redoubtable chaplain took a still deeper plunge into blunder. Shortly after the occasion above mentioned at the opening of an afternoon session, when the question of woman suffrage was pending before the House, he took the liberty of making his prayer a partisan argument, expressing to God the fervent hope that members would act favorably to woman suffrage. For this he was promptly made the subject of a question of order, raised the very moment that the prayer was concluded, the point being that no one not a member could discuss questions pending before the House.

We may avoid falling into such errors as this in the use of language, chiefly perhaps by observing two rules of self discipline: first, to be guided strongly by our common sense and not by the mere impulses of the moment; and secondly, to keep ourselves constantly in familiarity with the styles of thought and language of such of our great writers and speakers as are eminent in simplicity of diction.

Thus, in contrast to all that is tumid and swelling, see in what simple, manly strength John G. Whittier wrote of the burning of Chicago, while his tender heart must have been overflowing with all the impulsive sympathy that such an event could inspire.

"Men said at vespers, All is well!
In one wild night the city fell;
Fell shrines of prayer, and marts of gain
Before the fiery hurricane.

On threescore spires had sunset shone,
Where ghastly sunrise looked on none!
Men clasped each other's hands and said,
The City of the West is dead!

Brave hearts who fought in slow retreat,
The fiends of fire from street to street,
Turned powerless to the blinding glare,
The dumb defiance of despair.

A sudden impulse thrilled each wire
That signalled round that sea of fire,
Swift words of cheer, warm heart-throbs came;
In tears of pity, died the flame!

From East, from West, from South, from North,
The messages of hope shot forth,
And underneath the severing wave,
The world, full-handed, reached to save.

Fair seemed the old; but fairer still
The new the weary void shall fill,
With dearer homes than those o'erthrown
For love shall lay each corner-stone.

Rise stricken City! from thee throw
The ashen sack-cloth of thy woe;
And build as Thebes to Amphion's strain,
To songs of cheer, thy walls again!

How shriveled in thy hot distress
The primal sin of selfishness!
How instant rose to take thy part
The angel in the human heart!

Ah! not in vain the flames that tossed
Above thy dreadful holecaust!
For Christ again has preached through thee
The gospel of humanity.

Then lift once more thy towers on high,
And fret with spires the Western sky,
To tell that God is yet with us,
And love is still miraculous!"

In the article by Prof. Mayer, on the Metric System, published in the April number of the SCHOOL JOURNAL, an allusion is made to Mr. Elihu Burritt's calculation of the time wasted in England by introducing the "u" into such words as "favour," "honour," &c. The results of Mr. Burritt's thoughts on this subject deserve a more complete statement. He not only calculated the time, but with genuine New England thrift, went beyond this, and estimated the equivalent of that time in money in accordance with established rates of labor. He reached the following conclusion. The introduction of the "u" into the class of words of which "honour" is a type, costs the British publishers annually, in the field of English Literature, the amount of £10,000, or nearly $50,000! Mr. Burritt did yet more; he bearded the lion in his den. He wrote an article on the subject to the *Athenæum* showing clearly the infelicities of spelling these words in this unwieldy and corrupt way. In answer to the charge made by British writers that the omission of the "u" is an unworthy "Americanism," he put the question very aptly and justly, "Is it an Americanism" to spell honor as Cicero spelt it?" He reminded the English that we are only clinging to the pure classic usage, as well as to the most economical way of spelling these words, while they are using the Norman corruption of the classic originals as shown in the French word "honneur." The *Athenæum* courteously published the article, but was very careful to insert the "u" in every word of that class which Mr. Burritt used!

In these days of voluminous printing and expensive labor, this matter of financial economy in the spelling of words claims our most serious consideration. Every useless letter involves serious expenditure when often repeated, as Mr. Burritt's calculation suggests—expenditure on the part of the author in his manuscript work, which is not so easily estimated, as well as on the part of printing-office work. Every letter then that can be dropped with decent respect to classic usage should be dismissed at once. In fact it is absolute folly for some of our publishers to be wasting their money in the retention of such antiquated, cumbersome letters as the final "k" in such words as publick, domestick, &c. Yet this is done daily in the South, as any one may find out by obtaining a copy of a Richmond, Va., paper.

We begin now to see what a benefactor Noah Webster has been to us in the simplifying of many

of our words for which he has received such unstinted abuse from those who are fastened in antiquated stocks in this matter.

It would not be strange, if in view of the probable immense increase of literary work in future days, and of the economical considerations above suggested, a thorough official overhauling of our language should be deemed expedient, reducing it to great compactness.

Such a work, judiciously done, would be a blessing, even if the small class of inflexible linguists should thereupon go a-mourning for the rest of their days.

We derive much pleasure in looking over the imposing pile of sister educational journals which we receive from month to month. If we do not often allude to their contents, it is not from any lack of appreciation, but simply for want of time and room, after our own more especially pressing topics have been alluded to. But we read them "con amore," and often find that which we can enjoy, that which we can applaud, and that for which, as a bold presentation of the wise and the right, we are truly thankful. Often as we read some spirited plea for the casting off of some musty old school habit of former days, or remonstrance against penuriousness towards schools or school teachers, or some crisp, sparkling words of advice, or some apt presentation of a successful method of instruction, the smile of satisfaction creeps over our face; we feel that we would like to shake hands with the writer, to congratulate him cordially, to wish him many continued renewals of such successes. These are our feelings and our desires; but in most cases the facts are, that we have to turn at once to other work, and our appreciation has to bury itself in silence.

It should not be so: there should be the most constant and hearty expressions, as well as sympathies, between the co-laborers in editorial literature throughout our country. We are now working on virtually independent, separated, in fact isolated lines, though of course harmonious in all essentials; we are having a fair measure of success. But the true power of school journalism can hardly be looked for till some mutual bond exists far beyond this mere courteous cordiality—till constant, intimate and thorough conferences are held between those chiefly responsible for these various journalistic influences, and a settled concerted plan of mutual action is determined upon.

What a mass of earnest work is shown in the pile of the April numbers alone, lying on our desk. It would be unworthy of its quality to quote the old saying, "where there is so much smoke there must be some fire"; it is more fitting to say "where there is so much fire in the right place there must be also great power."

Let us glance at the school journals:

The Pennsylvania School Journal bears the unmistakeable marks of solid, practical commonsense business on its face. It is a very good number of a thoroughly good journal. Its contents are remarkably varied. The most weighty article is on "The Open Way to Reform," by its well-known editor, Hon. J. P. Wickersham. From its suggestive paragraphs we select the following passage:—

"God's school is the family and God's teachers are the parents. The finest and best equipped school-house in the world is a poor substitute as a place of instruction for the humblest home wherein dwell peace and happiness; and no teacher's skill can ever equal the training power of a true mother's love, or an intelligent father's hand. If qualified for the relation they sustain to him, parents can exert an influence almost omnipotent on the destinies of their child. He comes to them weak physically, and, intellectually and morally, wholly destitute of knowledge; but with germs pregnant with manly power in every fibre of his being. They are the potters, he the clay; and they can mould his irrepressible nature almost at will. It was Napoleon, if we remember rightly, who said the greatest want of France was 'good mothers'; and good mothers are to-day the greatest want of ours and of every other nation in the world. If parental instruction and discipline were what they should be during the present generation, the next would be lifted up to a plane of civilization far higher than any hitherto anywhere attained by the most favorably circumstanced nations. Christian philanthropy should look to the formation of *model families* in every neighborhood, as the most effective means of reforming the world.

"Another has said that 'schools are a necessary evil,' and we are almost compelled, in a certain sense, to agree with him. If the family could be made what it ought to be, there would be little necessity for the school; but schools are necessary, and, in our present social condition, they are not an evil, but a great good. Few parents have the ability, skill, time, and disposition to educate their own children. This defective family administration must be supplemented by a system of schools; and

it is found to be the wisest policy for States to establish and control such systems."

"How to Teach Arithmetic," by Prof. E. C. Hewett, "Conducting Recitations, No. III.," by Prof. Wm. F. Phelps, and the editorial on the value of school inspection are also papers of especial value.

THE ILLINOIS TEACHER for April has a good strong list of articles, all valuable, all practical, and an interesting discussion of several leading school questions in the editorial department; "Of Methods in Geometry," by Prof. T. H. Safford, and "An Easy Method of Finding, Mentally, Squares of some Numbers," are particularly noticeable.

THE WISCONSIN JOURNAL OF EDUCATION is a worthy specimen of western vigor. We find ourselves especially interested in "Teaching Geography in Switzerland," by Jacob Wernli; the sprightly article "Nothing but Leaves," and the scholarly discussion of "Weights, Measures, and Coins." The last comes down heavily on the proposed introduction of the French metric system. There are two strong sides to this question, and strong men on each side. Such discussions are quite profitable, as tending to give light, and lead the sooner to a final decision.

THE INDIANA SCHOOL JOURNAL we consider unsurpassed for sound practical excellence. We are sure that teachers resident in any state would find it profitable to take and read it regularly. This number opens with a quite spicy paper entitled "How to Teach the Use of Good English," by the Rev. Thos. Holmes, D.D. There are also two good papers on "Instruction in Arithmetic," and one on "Reading."

THE ARKANSAS JOURNAL OF EDUCATION has not yet a strong original character of its own, but doubtless has to contend against many obstacles to sustain itself at all in the unsettled condition of educational interests in that State.

IN THE CHICAGO SCHOOLMASTER the most useful papers are probably "How to do it," by J. M. Gregory, giving certain views as to the relative importance of common school studies, and "Animal Lessons," by H. H. Belfield. In the former, we think Dr. Gregory underrates altogether too much the value of geography in common schools; few things can be of greater practical importance than a thorough knowledge of geographical facts, which, as master minds like Guyot and Ritter show us, are the very starting points of human habits and human history. The writer of "Educational Publications," in criticising the remark about the supposed equality in size between a tree trunk and its branches, does not seem to be aware that it is John Ruskin's remark.

THE AMERICAN EDUCATIONAL MONTHLY gives us this month its usual pleasant variety. "Education in Japan" is both timely and a very interesting resumé of the educational status in that wonderful empire. "Female Education" discusses well a vexed and difficult question.

THE IOWA SCHOOL JOURNAL presents us two articles deserving special mention: "Decimal Fractions," by J. B. Reynolds, and "Primary Teaching," by M. C. Lingenfelter.

THE NATIONAL NORMAL is the most unique of all our school journals. No one will lightly accuse it of not being original, and simply impetuous in carrying out its aims, which certainly are both honest and high. The favorite motto "Be sure you are right, and then go ahead," is evidently adopted and carried out with energy by this journal. There are no clouds of doubt hanging over the editor's mind as to the educational plans to be pursued, and his decisions being sharply made on these points, he drives along so furiously that the rest of us seem quite slow affairs. The most able paper in the April number appears to us to be "Ladies as Superintendents and Principals," by E. O. Vaile.

THE NATIONAL TEACHER is, in its solid worth, what we might expect from the distinguished educator who is its editor. Its tendency is always to be progressive if practical ways can be found to be so. We expect to be instructed whenever we take in hand one of its numbers, nor have we yet been in any case disappointed. In the number under present consideration, we find the powerful speech of Gen. Garfield, delivered lately before the House of Representatives, on "National Aid to Education"; a timely article by M. A. Newell, "To Teachers without 'Experience' and without 'Training,'" and a strong editorial on "Natural Science in Public Schools." The other good things we cannot now mention.

THE RHODE ISLAND SCHOOLMASTER is not at all to be measured in relative importance by the size of its state: for, both in size and quality, it is fully worthy to represent the largest of our states. Its first paper is also its most important one, a carefully written essay on "Practical Education," by A. D. Small. "A Word for Opportunity," by Geo. S. Burleigh, and "The Queen's English," by Prof. J. R. Boise, are also excellent.

THE MAINE JOURNAL OF EDUCATION has a good

essay on "Methods of Teaching," by N. A. Luce, and on "Geography," by J. W. Lang,—and a comical "Bit of Real Experience," by the editor.

THE MINNESOTA TEACHER does good public service in the discussion of "Drawing," by Miss Jennie Lynch, and in various shorter articles.

There are some other educational monthlies (and the monthlies alone are now under consideration), whose April issue has not yet reached us; we have therefore come to the end of our tour of inspection, and feel thereby the more convinced that we belong to a strong army of educators.

ANNALS OF EDUCATION.

MARLBOROUGH.

The school in the center district of Marlborough, recently taught by Mr. Albert J. Russell, is to be under the charge of Miss Ella J. Welch during the coming Summer. Miss Welch studied for a short time at the State Normal School, and has now, for nearly a year, been teaching with success at East Hampton. She enters upon the duties of her new position under most favorable auspices.

THOMASTON.

Mr. Albert J. Russell, a graduate of the Normal School at New Britain, in the class of 1871, has been appointed Principal of the Graded School in Thomaston. Mr. Russell has had a year of very successful experience in teaching, and it is expected that he will soon make his influence felt for good in the Naugatuck Valley.

HARTFORD HIGH SCHOOL.

Anniversaries at this institution are usually occasions of considerable formality. This is so of design, for it is the aim of school visitors and instructors to make "Graduating Exercises" pleasantly memorable to the members of each outgoing class.

The exercises of the graduating class of 1872 occurred on Friday forenoon, April 19, and called together a very large and brilliant audience to attend them. Out of a class of twenty-five members, fifteen were selected to appear upon the stage, Miss Emma Irene Tarbox giving the "Salutatory" in Latin, and William Waldo Hyde delivering the "Valedictories." The subjects written upon were: King Cophetus and the Beggar Maid, Uncle Sam's Farm Fence, Individuality, Nicknames, Unsolved Mysteries, Prospects of Change in England, The Theory of a Successful Life, The Three Johns, The Growth of the Drama in England, The International Society, Epitaphs, People from whom much cannot be expected, Travel (excused from reading), and Freedom, with the valedictories. The Latin Salutatory, usually the second honor, was this year equal to the first. It was well pronounced, and the pronunciation in an exercise of this kind is usually the thing best appreciated. The "International Society," by James Sturgis Bryant, is said by one reporter to have been the very best piece delivered during the morning. We see it stated that "Mr. Hyde's oration was an excellent production, fully worthy of a valedictorian."

Of the evening exercises the *Hartford Courant* for April 20 contains so felicitous a report that we insert it entire, in the confidence that, for the greater part of our readers, it will be the most acceptable thing we can do just here. The addresses contain much that is of general interest, and we feel that the following report is worthy of the space which it occupies. The *Courant* says:—

The large hall of the school was densely crowded with people last evening, the attendance being so numerous that many who arrived even as early as 7½ o'clock found it very difficult to secure accommodations. Extra seats were brought in, and what with the aisles and rear part of the room well taken up the audience was a pretty compact one. At about a quarter before 8 o'clock the procession of teachers, the committee, visitors, speakers, and graduates, entered the hall led by Mr. Capron, the principal. The young ladies of the graduating class were dressed in pure white, and wore wreaths of blossoms, and looked very beautiful. After singing, prayer was offered by the Rev. C. R. Fisher.

Mr. Capron extended a cordial welcome to all present. We feel, he said, that so important a period in school life should have its appropriate formalities; and this event will be long treasured in the memory of the graduates. He closed by introducing Professor Northrop, who represents the entire common school system of the State.

Mr. Northrop said he was impressed by the beautiful spectacle exhibited here to-night because no where in the old world do we find young ladies and gentlemen studying together—at least carrying their studies to such high results. The State must be proud of this school. Abroad they are opposed to our idea of the co education of the sexes. Perhaps, with the corruption existing there it would not be safe; but he believed here in educating boys and girls together. This social culture has a kind of atmosphere which envelopes the young man like the sunlight, improving him in his manners, studies, and thoughts, suggesting higher aims, prompting inspirations—yes, here, where the sexes meet, is the place for the growth of the highest elements

of mankind, generosity, true schooling and correctness. And on the other side it cultivates the higher sensibilities of the young woman. Right thinking, study, ought to end in right feeling. Truth never triumphs limited to the intellect alone. The loving apprehension of the heart must be enlisted. He followed out these ideas with force and eloquence, and showed that abroad and in our country somewhat the sensibilities are ignored, the whole direction being to the intellect: and held that these sensibilities can be best marked by co-education as in the family. By our intellects, we are mere spectators of the universe: by our susceptibilities we become admirers and have reverence for our God. Comparing the schools in this country with those of Europe he thought that ours were excelled only in the teaching of history, drawing and language. He spoke especially of the German system, and said the work which was begun by the sword would be completed in the schools. The mastery of the mother tongue is the first thing aimed at in the German schools: and the process of treating foreign languages is different from ours, as they translate from their own language into others and not the reverse. He hoped to see in Connecticut the little children trained in the use of the king's English, as they are taught abroad, so that they may make a discriminating application of words. There is with them a poverty of language, which he illustrates by alluding to the common use of the word "splendid."

Governor Jewell was next introduced and received with applause. He said it was impossible for any one to be a careful observer of the affairs of this State without being very much interested in the common schools—without observing that all the blessings we enjoy are the result of the common school. The universality of education is the very foundation of the country itself. The hopes of the republic rest upon compulsory education, and it is out of this that our experiment of self-government is to become a grand success. The reply in all monarchial countries to the idea of republicanism is that the masses are not educated up to it, and our country is pointed to as in the very advance of civilization. He always felt pride when abroad to hear these expressions. Connecticut has always exercised a large influence in the country, very much out of proportion to her population, and this is because of our common school system. So long as free institutions are based upon the schools they are in no danger. He was proud of the whole system in the State, but was especially proud of the schools of Hartford, which has set a noble example. Connecticut has been and always will be proud of her sons and daughters: they are found everywhere and with the progressives, and in the future when we have crystalized and christianized the whole continent, we have every reason to expect that they will be found in the front rank, where they have always been, fighting for liberty and for law. (Great applause.)

Mr. Capron said this was a landmark in the history of the school. It is just a quarter of a century since the first class graduated. It was small, not more than six members. Mr. J. B. Bunce was a member. In the class of '49 was one who is with us to-night, and the speaker complimented him as the first of the high school boys who has been honored with the chief magistracy of the city. (Applause.) He introduced his honor, Mayor Robinson.

Mayor Robinson said if there is any one spot on which a citizen may feel an honest pride, it is here. Our citizens are proud of this high school. For one, he always looked forward to its anniversaries with pleasure, because of its present power and future promises. The mayor took up the thought of the State secretary with reference to co-education and to the general idea of education, and spoke with earnest eloquence. He made a pleasant allusion to the frequent use of other adjectives, besides the one Mr. Northrop had mentioned, such as "horrid," "disgusting," etc., and then touched upon the power and beauty of the English language, to which he always returned as to a first love, with feelings of joy. He continued at some length, deeply interesting the audience.

The Hon. R. D. Hubbard was next introduced in a very pleasant way by Mr. Capron. Mr. Hubbard felicitously opened the way for an admirable speech, upholding the common school, which, he said, was the property of the people, and he added, "now that the election is over, perhaps I may say that I am one of the people." (Laughter.) The speech glowed with brilliant thoughts and was richly enjoyed by the audience. Touching upon the higher education he said, if the universities can boast of a Burke and a Macaulay, did it ever occur to you that the common school has furnished a Bunyan, a Shakespeare, a Sheridan, and a Dickens; and while the university in this country has given us Daniel Webster, the common school has given us Washington, Patrick Henry, Henry Clay, and Abraham Lincoln. (Applause.) And here we have from the common school the governor of Connecticut. (Applause.) Mr. Hubbard then facetiously spoke of Mr. Robinson and himself as representatives of the university. As he had been "lassooed and dragooned" (great laughter) into making a speech, he claimed the right of making a bayonet punish those who dragooned him. But the audience did not consider his continuation any infliction. When he closed there was long and continued applause.

Mr. Capron here announced the award of prizes as follows:—

Prizes offered by Messrs. Henry C. Robinson, Rowland Mather, Elijah H. Owen, A. C. Dunham, Thos. Smith, J. C. Parsons and Daniel Phillips.

Prizes in Scholarship, $15 *and* $10.—Senior class, first prize, Wm. W. Hyde; second prize, Abner Hendee. Junior class, first prize, Henry C. Alvord; second prize, Geo. K. Welch. Third class, first prize, Abby M. Williams; second prize, Horace H.

Buck. Fourth class, first prize, Patrick H. Daly; second prize, Fannie G. Darrow.

Declamations.—$15 and $10—First prize divided between Charles S. Woodruff and William W. Hyde; second prize, Charles F. Bacon.

Reading.—First prize, Lizzie Thacher; second prize, Helen Y. Smith.

Committee for Declamations.—The Rev. Professor Johnson, the Rev. T. J. Holmes, Edward C. Stone.

Committee for Reading.—Mrs. E. M. Reed, Mrs. H. L. Olmsted, Miss Mattie F. Henry.

The acting visitor, the Rev. C. R. Fisher, here presented the diplomas, the members of the class forming a semi-circle on the stage. The presentation was made without any formal address, the visitor merely extending his congratulations. This closed the very interesting exercises of the evening.

Commodore Worden, Superintendent of the Naval Academy at Annapolis, has reported to the Secretary of the Navy in regard to the Japanese students at that institution. Their names are Zun Zow Matzmulla and Koroka Katz. During the second academic year the former, in a class of forty-five, stood number eight in mathematics, eleven in chemistry, fifteen in French, forty-one in seamanship, thirty-three in geography, and twenty-six in drawing, history, and rhetoric. Mr. Koroka Katz was not so good in mathematics, as he stood thirty-third in a class of eighty-nine, thirty-eighth in seamanship, fifty-ninth in grammar, and fifty-first in French and history. Of course the Japanese government pays all the expenses of these young gentlemen.

The next annual meeting of the National Educational Association, is to be held in Boston on the 6th, 7th and 8th days of August next. Three sessions will be held each day, the forenoon and evening being occupied by the General Association, and the afternoon by the four departments: elementary, normal, superintendence, and higher education. A full announcement of the arrangements which are being perfected by the officers will be made in due time. It is expected that several of the most important educational topics which are now being discussed throughout the country will receive attention, and no labor will be spared to make the meeting a successful one. We shall try to keep our readers posted in regard to developments as they may occur.

STATE AID.

The State proffers to every district which raises a like amount, ten dollars the first year and five dollars each succeeding year for the purchase of apparatus, reference books, and "approved" library books. A larger number of districts have drawn this State appropriation during the last year than ever before. The law was enacted in 1856, and the number of applications and the amount drawn from the treasury have been steadily increasing for the last five years. This law is intended to help those who help themselves. There is no district too small or too poor to raise $5 or $10 for increasing the equipment and facilitating the work of the school room, thus getting an equal sum as a bounty from the State. Great good has been accomplished by this means at a small cost to the State. All orders of district committees who comply with the conditions of the law are promptly paid by the Secretary of the Board of Education. Webster's Dictionary, Lippincott's Universal Gazeteer, and other reference books, and several series of wall maps, are furnished by him *for schools only* at less than the wholesale prices.

TEACHERS INSTITUTES.

The success of the institutes recently held invites the continuance of these profitable meetings. One was held in Middletown, April 25th—27th. Other sessions will soon be held in Hartford, Litchfield, Windham and Tolland counties. The presence of gentlemen in high official position, such as the Governor, Lieut.-Governor, and Judges Foster and Carpenter of the Supreme Court, and other prominent friends of education, have added interest to the recent meetings.

Book Notices.

We have received the following reports, all of which contain statistics, criticisms and suggestions of much value.

Second Annual Report of the Board of Education, together with the Twenty-Seventh Annual Report of the Commissioner of Public Schools of Rhode Island.

Eighteenth Annual Report of the State Superintendent of Common Schools, State of Maine, for 1871.

Forty-second Annual Report of the Common Schools of Cincinnati, for the school year ending June 30, 1871.

Seventh Annual Report of the Board of Education of the city of Leavenworth, Kansas, 1870-71.

An Elementary Manual of Chemistry.*—Eliot & Storer's text-book in chemistry has been long enough before the community to be well known and appreciated for its excellence. This excellence however is rather of a massive order. The present book is a very much needed condensation of the other; the work of condensation is well done, and this elementary volume contains all the topics that ordinary classes in academies would need. It is fortunate that the condensing process did not eliminate the very serviceable

* *An Elementary Manual of Chemistry*, abridged from Eliot & Storer's Manual. By Wm. Ripley Nichols.

appendix on Chemical Manipulation. In one respect this "abridgment" is more full than its original; in the introduction of the essential features of organic chemistry (not found in the larger work) under the appropriate topic of Carbon, the author has made a decided "hit."

A MANUAL OF ENGLISH LITERATURE: A Text-Book for Schools and Colleges.*—The advent of this book is one of the most important events in this year's record of school publications. It is the work of a man eminent in qualifications for such labor—of one who for many years has been a most distinguished teacher of teachers, and who ought to know by this time what teachers and pupils require, while a long and successful experience in authorship has given him much fluency with the pen. The author has had the additional advantage of free access to some of the best private libraries in the country, rich in documents bearing upon the various special themes of the work. This compilation has been a task of very great toil, and as an instance of patient scholarship, is an honor to our country.

It may prevent unnecessary disappointment on the part of some who may order this book before seeing it, to inform them that the word "English" in its title does not here cover all that is commonly covered by it in the expression "English Language and Literature." It is used in its restricted sense, covering only the literature of *England.* A corresponding work on "American Literature" is in course of preparation by the same author.

Prof. Hart does not hold the view recently expressed by a writer in our literature, that writers either belonging to or preceding the ages of Chaucer and Spenser are too archaic in style and diction to be studied in our schools; he therefore gives full accounts of those early authors evidently designing quotations from their works to be brought forward by the teacher as opportunity might afford. We approve of this thoroughly. We lose some of the quaintest and most deftly wrought passages to be found in any literature when we pass these worthies by. Moreover, considered simply as an exercise in the history of our noble language, and as instruction as to the genesis of many of its forms, the study of these writers of our literary infancy is valuable.

The most novel and most important feature in Prof. Hart's Literature, is his method of classifying the authors. They are not heaped together unphilosophically by the century-full at a time, nor are they classed as the literati of the reigning sovereign of their day. Excellent as this latter method has proved Prof. Hart has conceived that he could secure the same advantages as by this system, and some additional ones, by grouping the minor writers about the greatest literary giant of their period. This plan is harmonious, and serves to emphasize the greatness of the central figure, while it indicates also to some extent the probable influence on the literary circles of the various ages, exerted by the strongest men of thought. Thus we find in this book such chapters as these, "Milton and his Contemporaries," "Spenser and Contemporary Poets," "Sir Walter Scott and his Contemporaries," while for our own age, Tennyson is selected as the central unit of literary gifts. Political writers are included on the lists and thus *The Thunderer*, *The London Times*, and its notable correspondent, William H. Russell, come in for their share of notice.

Quotations are not given from the English writers introduced, but a clear condensed account of their life, works and style is always presented. The lists of authors are exceedingly copious, and fully justify the use of this work, claimed in its preface, though not in its title, as a book of reference. As such, it is certain to prove invaluable in the hands of teachers, containing as it does an immense array of facts and criticisms within the compass of a convenient hand-book.

The only objection we have heard urged against this work is in regard to this very point. As was to have been expected, it is said that as a book of reference it cannot be too highly recommended, but that this very quality makes it too voluminous for use as a text-book.

While there is undoubtedly much force in this criticism, it must not be forgotten, on the other hand, that these two uses are kept entirely distinct throughout the book. The prominent points, to be studied by classes, are in large type, and the mass of detailed information is in small type. Classes can therefore with perfect ease confine their study to the larger print; then their remains to them this advantage: they hold in their hands a work which has not been exhausted by its text-book use; it may remain in their libraries for the future study of their maturer years. They will always be able along the lines of their school day study of the subject, to find complete details at hand for the enrichment of of their adult powers. It might, however, be acceptable to many, if the suggestion already made could be carried out, of providing copies for those who prefer them, containing only the paragraphs of larger type, for simple use in the school-room. We believe that this latest result of Prof. Hart's energy, is destined to to have a career.

THE WORKS OF CHARLES DICKENS: Household Edition.*—We are not of those who think the works of

* *A Manual of English Literature:* A text-book for Schools and Colleges. By John S. Hart, LL.D., Professor of Rhetoric and of the English Language and Literature, in the College of New Jersey and late Principal of the New Jersey State Normal School. Published by Eldredge and Brother, Philadelphia, Pa.

* *The Works of Charles Dickens.* Household Edition. The Adventures of Oliver Twist, with twenty-eight illustrations, by J. Mahoney. The Life and Adventures of Martin Chuzzlewit with fifty-nine illustrations, by J. Barnard.

Mr. Dickens ephemeral. They are founded too deeply upon facts in human nature, and appeal too strongly to the common sympathies of our nature to be easily forgotten. As a marvellous collection of character illustrations, they will always be invaluable, while their tendency toward the mitigation of various social evils which already has produced beneficent results will continue a power as long as our language and the weakness of human nature coëxist. We believe that in future ages, whenever the memories of the literary works of the nineteenth century are called up—it will be as natural to say, "That was the age of Dickens," as it is now, to call the closing decades of the sixteenth century, Shakespeare's age. There is an abundance of both relaxing entertainment and of instructive material in Dickens' works. Teachers need both. What edition shall they procure? We can assure them from an examination of these two numbers of Harper's Household Edition, that they would be delighted with the publications in this form. The binding is elegant, the type clear and the pages sufficiently large to allow the artistic illustrations to produce their best effect.

These illustrations, which are numerous, are also very successful in portraying the various creatures of Mr. Dickens' fancy, in some of their most characteristic attitudes. Altogether this is one of the most acceptable forms in which one can possess the works of this great author.

INSTINCT IN ANIMALS.*—President Chadbourne has in his treatise or Instinct given us a volume of exceeding interest and rich in instruction. The work is in the form of lectures, having been actually delivered as such in the Lowell course. He has handled his subject with philosophical caution, in well-studied method, and in great richness and completeness. The style is simple, clear and popular. The volume is altogether attractive in matter and manner and is worthy of general perusal and study.

The nature of Instinct is not defined till its manifestations have been carefully investigated in all their diversity of modifications. It is at length defined to be "an impulse to a particular kind of voluntary action which the being needs to perform as an individual or representative of a species; but which he could not possibly learn to perform before he needs to act." It "includes all the original impulses, excepting the appetites;" and also includes "that knowledge and skill with which animals are endowed, which experience may call into exercise, but which it does not give." The appetites are regarded as functional and as proper conditions for the activity of certain instincts.

The operations of instinct are simulated in inorganic nature and on a still higher scale in plant life. The Catch flies from out a sticky fluid which holds the smaller insects. The Venus's fly-trap puts forth leaves fashioned to art like barbs for holding their prey. The Pitcher-plant beguiles down into its deep cavern along hairs pointing downward that hinder retreat. The provisions for the fertilization of plants, for the diffusion of the seeds, and for the securing of them in places favorable to their germination and development, are many of them exceedingly instinct-like. Plants, like some animals, even become protectors to other species of life; as the oak forms a gall or oak-apple which serves as a home and a feeder for the Gall-fly.

The first connection of Instinct with these instinct-like processes is seen in the provision for the nourishment of the young animal life. The raising of the head and the opening of the bill to receive food by the young robin, to which the act of the parent-bird in supplying the food is a corresponding act of instinct, is an example.

Pure instinct needs no experience. It goes before to preserve life until knowledge from experience is possible. It works by a wisdom of which its possessor has no apprehension. The theory of transmitted skill involves an ancestry certainly of marvelous ingenuity. How did they come by it? How did the species survive till these genuises appeared? The theory of natural selection accounts for the survival of the fittest; but how does it account for that characteristic in the animal by which it preserves itself? Hibernating animals feed voraciously in the autumn when food is abundant and accumulate fat to an unwonted degree; instinct then leads them to their winter's retreat, when the whole vital activity is so reduced that life is maintained for months without food. How were the species preserved till those changes in structure and function corresponding to those hibernating habits were effected? Then we find some species of animals dependent for their preservation on other species. The caw-bird lays its eggs in the nests of other birds. The owner of the nest hatches the eggs and nourishes the young as its own. When mature, the foundling forsakes its home and all the birds it has ever known to seek its own species, hatched in scattered nests, and mates and lives henceforth with them. Darwin tries to account for the hexagonal cell of the bee on the principle of economy. The bee wishes to save as much as possible of honey from going into wax. But the question is, how come the bee to be a builder at all? Nor does the existence of the instinct to build such cells turn in the continuance of bee-life through the Winter, as Darwin would have it. For some wasps, that perish every Fall leaving only eggs to perpetuate the species, build mathematical cells like honey bees.

Instinct is not infallible. It may be deceived. Flies lay eggs upon the carrier-plant which has the odor of putrid flesh, very young birds open their bills when any

* *Instinct:* its office in the animal kingdom and its relation to the higher powers in man. By P. A. Chadbourne, LL.D. New York: Geo. P. Putnam & Sons. 1872. 12mo, pp. 307.

sound is made upon the edge of the nest. The hen mistakes a crystal of salt for gravel.

Animals learn from experience. The elephant, that has broken through a bridge, fears to trust himself upon another. The wild squirrel, when first caught, trembles with fear; he learns to trust his master implicitly The fox will dig out his trap and spring it, and then like all the bait animals remember. They love and hate. They have an executive power of will. Man has instincts. The difference between man and the animal creation below him is that in him, intelligence rules instinct; in them instinct rules intelligence. In animals instinct is the proper guide because the highest; in man instinct needs control. Man besides has higher instincts than animals. He has the sense of obligation, the grand instinct, on which morality grounds itself. He has the sense of a relation to a higher being than himself. He has thus not only moral but religious instincts, as well as also the knowledge of relations through the power comprehensive. All these attributes the mere animal has not.

Personal.

The annual address before the American Geographical Society was delivered at its recent session by Prof. Daniel C. Gilman, of Yale College. This particular duty, according to established custom, falls upon the president of the society, but owing to the impossibility of his performing it this year, he secured the services of Prof. Gilman, though at very short notice. In explaining the matter, the President, Chief Justice Chas. P. Daly said: "It is exceedingly fortunate that we have a gentleman like Prof. Gilman, a watchful and accurate observer, to glean during the year and lay before us the result of the explorations of our own explorers, and the progress of our own country, in this most useful, interesting, and important field of inquiry." We have just received a copy of this address, which shows a most thorough acquaintance with the great fields of exploration on the part of the professor, and very much that is of interest in the results of this year's researches.

Mr. S. M. Capron, the successful Principal of the Hartford Public High School recently received from the class of '72, as a mark of esteem and respect, a beautiful silver oyster tureen.

The Rev. George Constantine of Amherst College, class of 1859, now a missionary in Greece, has lately sent to the college a monumental slab which he thinks must be one of the oldest in the country, even as old as the stone lions at Mycenæ, heretofore supposed to be the oldest.

Facetiae.

The remark was made a good while ago by an English wit, that he did not like to look at monkeys, they seemed to him so much like "poor relations." Is it possible that this passing jest started off Darwin in his philosophy?

"If you please, sir, how far is it to Susbridge?" asked an elderly lady of a gentleman as their train was hurrying them westward over the New York Central R. R. "Sus-bridge," exclaimed the gentleman, "there's no such place on the line." "But my ticket says there is," rejoined the lady producing it. It was marked Sus. Bridge; the gentleman, with a smile, at once proceeded to enlighten her on the subject of abbreviations, and to inform her that the suspension bridge was not far away.

Speaking of pages, a few years ago a fat drunkard accosted Sol Sharp, then a senator, for some position, saying, "Don't you remember me—I used to be a page?" "Well," responded Sol, "you've grown into a volume."

A lady some time back at the British Museum, asked if they had a skull of Oliver Cromwell. Being answered in the negative, "Dear me," said she, "that's strange, for they have one at Oxford."

Among the replies to an advertisement of a music committee for a "candidate as organist, music teacher etc.," was the following: "Gentlemen,—I notice your advertisement for organist and music teacher, either lady or gentleman. Having been both for several years, I offer you my services."

London papers relate curious stories of the blunders made by Oxford undergraduates in the Scripture examination which they have to pass before taking their degrees. It is told of one that when asked who was the first king of Israel, he was so fortunate as to stumble upon the name of Saul. He saw that he had hit the mark, and wishing to show the examiners how intimate his knowledge of the Scripture was, he added confidently, "Saul—also called Paul." Another was called upon to mention "the two instances recorded in Scripture of the lower animals speaking." The undergraduate thought for a moment, and replied, "Balaam's ass." "This is one, sir. What is the other?" At last a gleam of recollection lit up his face as he replied: "The whale! The whale said unto Jonah: Almost thou persuadest me to be a Christian!"

A gentleman of the negro persuasion thus philosophizes and reasonizes with the white world: "All men are made of clay, and, like a meerschaum pipe, are more valuable when they are highly colored." There is something in a "negro head" after all.

"Susie," said a teacher to one of her pupils, "you shouldn't make faces. You'll grow up homely if you make faces." Susie looked thoughtfully in the teacher's face a moment, and innocently asked, "Did you make faces when you were a little girl?"

Pretty Teacher—"Now Johnny Wells, can you tell me what is meant by a miracle?" Johnny—"Yes ma'am. Mother says if you don't marry our new parson it will be a miracle."

PUBLISHERS' NOTES.

SPECIAL NOTICE.

The prices of VENABLE'S SCHOOL HISTORY OF THE UNITED STATES, and THALHEIMER'S ANCIENT HISTORY (*see Wilson, Hinkle & Co's announcement*), are as follows:

VENABLE'S UNITED STATES: Retail price, $1.25; single specimen copy for examination, with a view to introduction, sent by mail, post paid, on receipt of 85 cts.

THALHEIMER'S ANCIENT: Retail price, 2.50; single specimen copy for examination, by mail, post paid, $2.00; or by express, $1.67.

Liberal terms on supplies for first introduction.

THE UNITED STATES HISTORY will be ready May 15th, and the ANCIENT HISTORY very shortly thereafter. 43

THE TESTIMONY OF PROF. HUNTINGTON IN REGARD TO JEPSON'S MUSIC READER.

During a period of twenty-five years in which I have been engaged in teaching, much of the time in schools and seminaries, I have been unable to find a text-book or music manual which would not either confuse the pupils by introducing a multiplicity of ideas in the same exercise or promote *rote singing* by limiting the demonstration of each principle to a single exercise, until I found the system adopted in Prof. Jepson's book, which, in my opinion, must be the one universally accepted and fostered by the public schools of our land. The intrinsic value and merit of the book has been fully demonstrated in the schools of New Haven, where it has been used for the past six years by its author, and in those of Hartford and its vicinity by Prof. R. S. True. One very important feature of the work is that it can be readily understood by subordinate teachers even though not altogether familiar with the science, and with the same preparation for each recitation which is made in every other science. Music may be *as* effectually taught, which is also shown in all the public schools where it has been adopted.

Prof. Jepson is worthy of high esteem, not only as a thorough musician, but as a philanthropist in placing in the hands of the children and adults of our country a book which will enable them to successfully cope with the musical progress of the age.

C. W. HUNTINGTON, *Hartford, Conn.*

THE NATIONAL EDUCATIONAL ASSOCIATION.

The next annual meeting of the National Educational Association will be held in the City of Boston, Mass., on the 6th, 7th and 8th days of August, 1872. The forenoon and evening of each day will be occupied by the General Association, and the afternoon of each day by the four Departments—Elementary, Normal, Superintendence, and Higher Education. The officers intrusted with the duty of making the arrangements are making good progress, and a full announcement will be made at an early day. The programme of exercises will include several of the most important educational topics now receiving consideration. No labor will be spared necessary to make the meeting a success.

E. E. WHITE, *President*, COLUMBUS, OHIO.
S. H. WHITE, *Secretary*, PEORIA, ILL.

TEACHERS' BULLETIN.

WANTED.—A situation as Principal of a Graded School. The applicant has had several years' successful experience as Principal of a school in one of the cities of Connecticut. Can furnish good testimonials. References, B. G. Northrop, Secretary of State Board of Education, or H. C. Davis, New Haven, Conn., to whom communications can be addressed.

SITUATION WANTED AS TEACHER.—A lady who has had experience in teaching in the Chicago public schools, would like a situation as teacher. Refers to Hon. B. G. Northrop, New Haven, and Charles Northend, New Britain.

To Teachers about to Purchase Books, either New or Second-Hand.—We beg to announce to the teachers of Connecticut that we keep a full stock of new and also second-hand School Books, as well as all kinds of new and second-hand Miscellaneous Books, which we sell at extremely low prices. Customers served as well by mail as though a visit was made in person. A full stock of teachers' supplies always on hand. Special discount to teachers.

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